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IMPERIALISM AND ARCHITECTURE.

THE greatness of a civilisation declares itself in its architecture. Without the pyramids and colossi of the Egyptians, the temples and monuments of the Greeks, or the thermæ, fora, and aqueducts of the Romans, ancient history would be to us mythical, legendary, and unreal. It is in the scattered remains of the architecture of these ancient peoples that we see them face to face, in their carvings that we feel their closest intimacy, and in their brick courses that we get the direct evidence of their strength. History teaches us that the endurance of a nation depends not so much upon its acquirements of the arts of war as upon its accomplishments in the arts of peace. Once having conquered the world, Alexander the Great controlled it not by the marshalling of troops, but by the founding and establishing of cities of Greek design. Rome spread out her *castræ* not as permanent military outposts, but as the precursors of her eternal *coloniæ*. It is to the civilising influence of their cities that we must attribute the enduring greatness of Greece and Rome.

Colonies and dependencies may be acquired by conquest, but their retention demands a higher cultivation as well as a superior military strength. Power without the civilising influence of culture is ignorance ruling knowledge with a rod. A Roman poet wrote of Greece, "Captive Greece made captive her captor Rome"; and during the latter end of last century Germany, after an enforced isolation from her weaker but more artistic opponent France, lost immeasurably in art inspiration as the intangible price of her apparent success. If knowledge and culture have been the necessary accompaniments of successful imperialism in the past, they are its essentials to-day. Now we see not one imperial power but many, each eagerly pursuing its own policy of government throughout colonies, dependencies, and protectorates beyond the sea, vying with its neighbours in dispensing the benefits of civilisation, resenting interference, and jealous of established success. Great Britain, by reason of the wider extent of her realms, glories in responsibilities demanding pre-eminence not only in administrative ability, but also in the practice of the arts. Incapacity in the latter is the precursor of weakness in the former. When Great Britain is incapable of setting an example of architectural achievement to her dependencies other nations more virile will slowly but surely take advantage of her relapse—step into the breach, undermine her prestige, and bring about an imperial disaffection more effectual in its consequences than the ravages of internal feuds.

Cosmopolitanism, that volatile medium which is so necessary to the fusion both of national and individual interests, is not antagonistic to imperialism. Imperial architecture is affected by cosmopolitanism, not in its parts, but as a whole.

Whilst within the confines of an empire there will ever exist climatic changes and racial differences, imperial character, adaptive, amenable, and elastic, will absorb and embrace these, remaining imperial and distinctive at the same time. The expression of imperial character through the medium of architecture is a policy which the Mother Country should encourage. Divergence from a course set by the parent which

is unattributable to the inherent demands of climate and location means imperial disintegration. Our rule and protection extends not only over aboriginal countries and continents which have gradually become immense colonisations, as in Australasia and Canada, but also over vast countries like India, whose native populations far outnumber the purely British section; or, again, it extends over countries like South Africa, original independent colonisations of settlers drafted from other European powers. If our imperialism is to be completely effective throughout the length and breadth of the Empire the Mother Country must see to it that her national character is expressed not only in the architecture of the cities she founds, but also in the public buildings of the cities she rules.

In Canada to-day there are but too evident tendencies to an appropriation of American ideals and methods of expression not entirely to be attributed to the natural influence of cosmopolitanism and opposed to imperialistic ideals. England as the hereditary exemplar is fast losing ground. The incompetence of the British missioner and the chaotic confusion of style in which our architecture has become entangled is largely responsible for this estrangement. In Vancouver, Toronto, and Montreal the largest and handsomest buildings are the works of American architects—McKim, Carrère & Hastings, and Burnham. England should take steps to recover this lost ground. In Australia the remoteness of any such civilising neighbours removes the danger of such an unnatural alliance; but even here we must remember that the eyes of the Australian are, by the spread of literature and the illuminations of the photographer, open to the architecture of the world. In South Africa, without interfering with the natural expression of imperialistic ideals, the homestead of the original Dutch settler supplies the motive for the same type of building erected in modern times. It is somewhat regrettable, however, to find that these rustic characterisations have been allowed to penetrate the more important monuments of the towns. Even so, whilst it may savour of presumption to enforce an imperial architecture upon countries like India, possessed of glorious native traditions, at the same time to attempt to emulate the native craftsman by a process of transmutation through British eyes would be as foolish as it would be weak. The recent erection of public buildings in Bombay in a pseudo-Indian-cum-English style is a distinctly retrograde step.

The confusion consequent on the attempt to combine the characteristics of a modern European and Indian building in one and the same structure, to erect for the native that which by tradition he alone is capable of erecting for himself, is to invite not only the scorn of the Imperialist, but also the ridicule of those whose own noble architecture has been so grossly caricatured. As a compliment in political diplomacy it is shallow, and from every point of view a grave error.

The Oriental is to-day interested and concerned in emulating the civilisation of the Western world. Our architectural schools are training students from India, China, and Japan. Indian rajahs vie with one another in building houses based on English models. If we are to retain suzerainty in India this attitude is one to be encouraged. Before the Mutiny palatial residences and public buildings were erected in accordance with the understood traditions of the protectorate power. With the characteristic assurance and confidence enjoyed by our predecessors of the period we unhesitatingly expressed ourselves in our natural and straightforward way. This was not to be interpreted as showing any lack of appreciation of the glories of the Mogul Empire; it showed no disrespect for the unapproachable delicacy of the minarets and domes of the Taj Mahal, no disregard for the beauty of the coniferous spires of the city of Benares, no antipathy to the palaces of Agra, or distaste for the earlier rock-cut tombs. Indeed, such an attitude is one of submission, veneration, and respect; a conscious recognition that these things are the unattainable remains of a glorious past.

An empire can nurse no finer ideal than the cohesion of its dominions in cities erected in one style of architecture recognised throughout the world as the expression of its own imperial ideals. The encouragement of such an empire pervading style throughout colonies, dependencies, and protectorates will tend to annihilate distance and conduce to an imperial liberty, equality, and fraternity. Out of political it will create personal ties, and into closer relation will bring the ambitions of those whose destiny it is to excel.

ST. GEORGE'S HALL, LIVERPOOL.

THERE is to be made a last determined effort to save Elmes's masterpiece from partial stultification. A number of the more influential citizens and the Architectural Society of Liverpool have taken the extreme step of securing the services of Mr. Rigby Swift, M.P., to appear on their behalf at the Local Government Board inquiry, which must necessarily be held upon the Corporation's application for the loan of 2,500*l.* The money is required to pay for the mutilation of the podium and the introduction of a flight of steps, with three shallow landings, as an accompaniment to the proposed equestrian statue of King Edward—a statue that will, if erected, have the misfortune to balance an unoccupied pedestal, until some personage of sufficient merit can be discovered to share the honours of commemoration with his late Majesty.

We shall not weary our readers with a detailed recital of the history in all its lamentable phases of this attempt to make the erection of a memorial to King Edward an excuse for a costly alteration of a perfect building. The salient points must be familiar to all—the initiation of the idea by Sir Goscombe John; the advisory committee of experts with a majority of one in favour of its execution; the disagreement of Sir Aston Webb and Professor Blomfield with the decision; the national and world-wide support which their attitude at once evoked in architectural circles, materialising in a storm of protest against the threatened desecration; protests from Royal Academicians, from the Council of the Royal Institute of British Architects, from Presidents of provincial architectural societies, from the architect members of the French Academie des Beaux-Arts, and from the leading American architects; and the disregard of all this, and of the strongest local feeling by the Corporation Committees, who felt that their dignity was being impaired, and, therefore, proceeded to propose alterations of their own by way of demonstrating their confidence in themselves. It was nothing to them that the available and published evidence of Elmes's and Cockerell's actual intentions show that both architects, after various experiments on paper and in practice, arrived at the same conclusion—the conclusion embodied in the existing treatment of the south elevation. The Corporation authorities have indeed displayed remarkable ingenuity in refusing to face that fact; they have consistently evaded it, and by professing to regard Cockerell's tentative introduction of steps into the podium (soon abandoned on account of their disastrous effect on the portico) as his and Elmes's ideal solution have glibly claimed to be regarded in the light of pious restorers.

When that point was reached very little was needed to transform their part in the controversy into *opéra bouffe*, and the little was provided by the fatal suggestion that the site now occupied on the St. George's Hall plateau by the Beaconsfield statue would provide the most suitable position for the memorial, and that thus the podium might be left intact and no damage done to the fabric of the building. Instantly the promoters of the original scheme were able to count on the support of an increased number of Conservative members of the Council, and thenceforward at all general meetings when the matter was discussed the voting proceeded largely on party lines, a Tory majority of a third to a quarter settling every individual question in favour of the Memorial Committee—and this simply by reason of the suggestion to remove the Beaconsfield statue being construed as a covert attempt to insult the local Conservative party. Whoever was the author of that unfortunate idea we have never been able to discover, but he was unquestionably responsible for the temporary conversion of the issue into a political one with all the ludicrous consequences which ensued.

Now, fortunately, the blunder has to a large extent been repaired. The opposition have succeeded in demonstrating their freedom from political bias, and many of the most prominent Conservative citizens, who have at various times rendered distinguished service to the interests of Liverpool, are now working to preserve the Hall from violation. Throughout the struggle the *Liverpool Daily Post and Mercury* has given invaluable assistance, and has finally opened, and itself headed, a subscription list for those who wish to increase the fighting fund of the opposition. The response has been most satisfactory, and the tone of the covering letters

accompanying donations shows how profoundly the contemplated outrage is resented. From every point of view the list of subscribers is the best evidence of public feeling on the subject. The names include Sir William Lever, Sir Edward Russell, Sir William Forwood, Sir Edward Evans, Mr. W. L. Gladstone, Mr. A. Guthrie, Mr. A. A. Booth, Colonel J. P. Reynolds, Professor C. H. Reilly, Mr. Lawrence Holt, Mr. Rathbone, Mr. Sydney Jones, Dr. E. K. Muspratt, and a host of other notable Liverpool citizens. In addition to the proof which so influential an array of names assures as to the purity of motive inspiring the opposition, the fact that Mr. Chaloner Dowdall, M.A., B.C.L., a Conservative ex-Lord Mayor, is acting with Mr. Rigby Swift for the opposition at the Local Government Board inquiry once and for all explodes the overworked theory that the political factor still counts. The plain truth is that, the Beaconsfield panic being over, men of every party realise with increasing clearness the folly of erecting a memorial involving an alteration of Elmes's design condemned by ninety-nine per cent. of expert opinion, national and foreign, and fiercely opposed by a large and distinguished body of citizens. A memorial to King Edward should, above everything else, be erected in a spirit of unanimity. To pretend that Liverpool is devoid of suitable sites is absurd. There are quite half a dozen admirable positions to be found, on any one of which Councillors more solicitous for the City's reputation than anxious to indulge a petty obstinacy could easily agree. The choice of one of these sites —say that by the Pier Head, for example —is the only way out of an intolerable *impasse*, the only escape from a situation of which everyone is weary.

It is too late now to urge the course that should have been taken by the defenders of Elmes's work. We think their stand should have been consistently that of "leave well alone." They should have insisted on the memorial being placed in some part of the city far away from St. George's Hall. By toying with adjacent sites they unwittingly created the dangerous impression that the Hall was not, after all, such a very sacred thing, that it might stand a little improvement here and there. And the enemies of the building were not slow to take advantage of that feeling and to profit by it to the fullest extent. However, we may safely trust to settle that delusion the expert evidence which some of the foremost architects in the country will give to the inquiry.

We have no desire to emphasise unduly the Liverpool Corporation's folly in attempting to amend such work as Elmes's and their publicly-proved incompetence to deal with æsthetic problems; but when the issues at stake are so vital it is essential that their ineptitude should be widely realised. The civic record in monumental work is catastrophic, and may be said only to have needed this last stupidity to render it unique. To take but one instance—the treatment of the area at the back of St. George's Hall, called St. John's-gardens. In so far as the majesty of the building can be affected by its surroundings, Elmes's conception is damaged by the proximity of that grotesquely crude arrangement. Even Berlin's Sieges-Allée is a mature performance by comparison. Yet we had a thousand times rather that the Memorial Committee had added to the childishness of the "Stoneyard" (as St. John's-gardens are so apty known) than have presumed to lay hands on the Hall itself.

Alas, we have learnt from bitter experience there is no hope that an appeal for them to retire from a position at once offensive and ridiculous will be treated otherwise than with an elaborate indifference! They have set their faces against retreat, continuing to pursue the policy they adopted at the beginning, ignoring all protest, however powerful, and all advice, however authoritative. But they may yet find that they are riding for a fall. It is one thing to render open spaces foolish and make great buildings suffer by proximity; it is another to seek the ruin of a masterpiece whose reputation is international, whose perfection and completeness are a precious heritage for all time. We shall be most profoundly surprised if the Government inquiry does not result in a refusal to sanction the provision of money for a memorial that will be a serious public inconvenience, do such irreparable mischief, and arouse feelings wholly alien to the memory of its subject.

NOTES.

Sta Sophia, Constantinople. MR. T. G. JACKSON, R.A., writes to the *Times* on the subject of the condition of Sta Sophia, which he examined in 1910 at the request of the Ministry of the Efkat, which has charge of all the sacred buildings of Constantinople. The piers on which the four great arches abut are stated by Procopius to be built of solid stone run with lead, but Mr. Jackson, from what he saw, suspects they are largely built of brick. The outer buttresses on the north and south sides which resist the thrust of these arches are not so strong as they look, as they are honeycombed with chambers and stairs. The north-east pendentive is badly bulged, but the full extent of the damage can only be seen from the gallery which surrounds the dome, the plan being no longer circular but deformed, and the great arched ribs of the dome are similarly distorted and have in large measure lost their arch construction. Many parts of the building are, Mr. Jackson says, out of plumb, and some of the vaults in danger of collapsing. We join with him in hoping that means may be found to prevent "a catastrophe of unparalleled consequence," but the difficulties in the way of such help as would be efficacious being given, and received, seem to us very great if not unsurmountable. Were the church once more dedicated to "the Eternal Wisdom" and in the hands of the Greek Church it would be easier to approach the question of restoration.

Selby Abbey: S. Transept Completed. THE restoration works necessitated by the fire of October 19, 1906, which destroyed a large part of Selby Abbey, have been brought to a conclusion by the completion of the rebuilding of the south transept, which was consecrated yesterday by the Archbishop of York. The cost, amounting to 8,000*l.*, has been defrayed by Mr. William Liversidge, a merchant and native of Selby, who has at various times since 1865 met the cost of restorations. These were carried out under the supervision of Sir Gilbert Scott and his son, Mr. Oldrid Scott, has acted as architect for the recent works. The damage done by the fire of 1906 was estimated at over 35,000*l.*, but so strong was the feeling that Selby Abbey was a national monument that funds for carrying out the restorations were almost immediately subscribed. Unfortunate as such destruction is, we may be thankful it did not happen in early Victorian days, since it would have meant the obliteration of all the interest and charm which our old churches possess, and which is usually retained under the more careful and scholarly hands of the architects of to-day.

The Dangers of Hyde Park Corner. THE awkward shape of the street connexions at Hyde Park Corner, which will not allow of the proper control of traffic, was indirectly the cause of a fatal accident on Wednesday, the 18th inst. A motor-'bus proceeding up Piccadilly, whilst swerving to avoid a collision with a van crossing diagonally out of Hamilton-place, knocked down and killed an unfortunate pedestrian. The coroner, in summing up, said that these accidents would continue to happen so long as the traffic was allowed to thread its way in and out in this busy thoroughfare, and that it was a little surprising that more accidents did not occur there. He said that he thought it would be a good thing if there was a rule compelling cross traffic from Hamilton-place to Grosvenor-place to give way to the traffic going east and west. The jury returned a verdict of accidental death and exonerated the driver of the motor-'bus from all blame. Such a verdict, however, is not entirely satisfactory; had they looked further into the cause of the accident they could not have done other than attach blame to the authorities responsible for the shape of the street. No city in the world possesses a finer force of police or better system for regulating traffic than London, but the police are powerless unless the street intersections are so designed that they can be controlled. In the days of the two-horse 'bus it was quite reasonable to expect vehicles crossing each other's routes to make way for one another and pass without accident, provided a spirit of forbearance existed; but to-day, when all sorts of traffic, from the private motor-car proceeding at high speed to the coster's barrow doing its four miles an hour, have to negotiate, not only police-regulated straight crossings, but also points where traffic is unregulated and proceeding diagonally, it is miraculous that more accidents do not occur. Together with the speeding up of modern traffic there must necessarily follow some alteration in the shapes of streets, and nowhere is this more necessary than at street crossings. The only intersection that can with safety be allowed in London to-day is that

which is at right angles, and the sooner the routes at Hyde Park Corner are reconstructed on these lines the better it will be for every one concerned.

Fire Inquiries and Loss of Child-life.

In consequence of recent disasters, considerable public attention has been given to the consideration of possible means of reducing the loss of life at present suffered in connexion with certain widely-used commodities. Especially we refer to celluloid, of the dangers of which London has lately had a terrible demonstration, and flannelette, which has its almost daily victims, though it seldom provides tragedies on such a sensational scale as the former. One of the necessary preliminaries to efficient action is the accumulation of knowledge of the actual facts connected with fires, and the uninitiated would probably imagine that the causes and results of all serious fires would be carefully studied by some properly constituted public authority. But as a matter of fact this is not done, official inquiry being in most parts of the country restricted to cases in which death occurs in connexion with the outbreak. In Scotland powers exist to inquire into the causes of serious fires even though unaccompanied by loss of life, and in the City of London similar inquests are held under the City of London Fire Inquests Act, 1888, with useful results. A Departmental Committee about two years ago recommended strongly that this system of inquiries into non-fatal but still serious fires should be extended to the whole country, and it is not easy to imagine why that recommendation is ignored. The *Manchester Courier* has been doing good work by a series of articles directing attention to these matters, and we trust that some reasonable legislation may result. In our issue of August 9 last we made some suggestions as to protection against the peculiar dangers attending the manufacture and use of celluloid articles. The precautions desirable in that case necessarily affect the arrangement and construction of buildings, but what our contemporary calls "the flannelette curse" can be dealt with to but a very limited extent, if at all, by regulations. We fear that flannelette or some similar material must be used until something better is invented, as the only possible substitute for that flannel or silk which, for obvious reasons of finance, must remain for the present almost equally out of reach of the very poor. To prohibit it would be to add largely to the suffering which winter brings and probably would involve a greater death roll from cold and its consequences than we now have from flannelette and other cotton fires. It should also be remembered that there are many cases of children being burnt by the ignition of woollen clothing as well as of cotton, and that if a child is left free to come into contact with fire nothing but fireproof clothing could give much safety.

Fire-guards in Tenement Dwellings.

It has been suggested that the duty of providing fire-guards should, in very poor tenements, be put upon the landlord, but we feel sure this scheme would be a mistake. We have some knowledge of the treatment received by the landlord's property in many poor dwellings, and feel that in the long run the suggested additional duty of the landlord would come to be represented by an additional rent upon all accommodation which carried the new liability to provide fire-guards. The poor already (and unavoidably) pay a higher rent for given accommodation than do those who are a little better off, and we should regret to see any artificial addition to this inevitable misfortune. It might be possible for the building regulations to require the provision of a strong iron ring or socket in a standardised position upon each side of the fireplace in every living-room of a certain class of house and for the local guardians to keep a stock of guards, of a suitable character for hooking to the fixed rings, for loan to those too poor to buy their own. They would not be always or continuously needed, many would remain serviceable for more than one case, the public charge would not be great, and the scheme would probably work with less friction than the other and supply what is wanted with as little cost to the user as possible. That it is really false political economy to try to give any class something for nothing we are not concerned to dispute; we would urge that, having in so many things swallowed the camel, it is ridiculous to strain at the gnat, especially as the desirability of the end in view is one as to which we apprehend no discussion. We all agree that fire risks must be minimised.

Exhibition Buildings at "Shakespeare's England."

Regent's Quadrant Committee.

We learn with much satisfaction that a Committee has been appointed by his Majesty's Treasury to consider the design to be adopted in rebuilding the Regent-street Quadrant. This official recognition of the need for further consideration of the position will be welcomed by all who have taken part in the controversy, or who have followed the proceedings. We need scarcely refer to the share taken by the *Builder* in the matter, culminating in the competition which provoked such widespread interest. The Committee consists of the Earl of Plymouth, C.B. (Chairman), Sir Henry Tanner, C.B., I.S.O., Mr. Reginald Blomfield, A.R.A., President, Royal Institute of British Architects, and Mr. John Murray, F.R.I.B.A. The action of the Treasury in constituting this Committee has significance further than the discussion of the immediate question. It points to the acceptance by the authorities of the principle advocated so persistently by us, namely, that the erection of buildings should be subject to some sort of municipal control.

EXHIBITION BUILDINGS AT "SHAKESPEARE'S ENGLAND."

By A. O. Collard, F.R.I.B.A.

At one time people who were not practically associated with the architectural work of exhibitions were apt to regard it as not sufficiently interesting for serious consideration. This was mainly due, no doubt, to an academic dislike for anything in the nature of a sham, produced by a special form of construction not requiring thick walls, by the kind of materials used, chiefly wood and plaster, and also owing to the limited period for which such work is required or was assumed to be able to last. There has been of late years, however, a noticeable growth of tolerance in the matter, even extending to pronounced approval. It has taken about fifty years in the use of plaster externally to represent other materials to produce this feeling. It is realised that special circumstances may render such work desirable and necessary, as it certainly is, in many cases, attractive. The educational value, too, of showing to modern city folk representations of old country and provincial buildings is a valuable means of arousing intelligent interest in architecture. Many charming results have been evolved since the Philadelphia Exhibition of 1876 by the elastic employment of plaster out of doors, enabling clever designers to exploit their genius for originality or in reproducing old work not always accessible to the general public.

One might go further, perhaps, and admit that occasionally an original plaster façade has been temporarily established which would give lasting satisfaction if translated into more permanent materials, though its conception would not have occurred had not the possibilities of plaster been invoked. For that matter, no one will deny that some so-called permanent buildings would be less objectionable were they constructed of more perishable materials than they really are. It is possible, too, to imagine that the stability of some better permanent buildings may be a source of anxiety when designed of a minimum strength, under the Building Act, in order to approach as nearly as possible to a required accommodation within the narrow limits of an authorised expenditure.

The exhibition architect does not suffer so much as others from the difficulty of making accommodation and appearance trim with cost, yet even he does not often escape

the vital question of stability, in spite of the fact that he is not providing the future with ancient buildings, nor has to comply with the ordinary laws of construction. Stability in exhibition edifices is largely a question of wind pressure, a fact which becomes firmly impressed on the architect's mind when he comes to submit his plans for the approval of the authorities. Nothing will convince them that a proposed temporary structure, fondly supposed to be screened from the least breath of wind, is not exposed to every violent tempest that blows. To resist these assumed gales the main supports have to be buried deep in concrete, strutted and knee-braced; the roof principals have to be wind-braced and other provision made for complete security. This question of wind pressure cannot be evaded except when it is possible to build inside other buildings, as, for instance, is the case with some parts of "Shakespeare's England" which are sheltered within the protective areas of the Queen's Palace and Ducal Hall.

Though ordinary rules may be inapplicable, in London the requirements of the County Council and their District Surveyors have to be minutely studied and observed, for they naturally desire to protect themselves from the risk of passing anything of questionable safety. In the early days of public exhibitions, in London and elsewhere, apart from that mighty steel and glass structure, the Crystal Palace, the simplest forms of wood framing were used to receive the plaster covering, without much regard to the effect of the wind.

In speaking of exhibition buildings, it has to be borne in mind that the framework of those which are intended to last for a longer period than one season have, in London, to be certified annually by the District Surveyor as structurally fit for retention before the County Council will renew the temporary building licences. This class of building has gradually become comparatively expensive, much to the disgust of promoters who have to find the money. The authorities, anticipating their continued use for several years and the constant risk of fire, insist on steel framework, concrete flooring, and the elimination of wood and other inflammable materials in construction, even objecting to wood studding and battens to which fibrous plaster is most conveniently fixed, a method dear to the hearts of economical exhibition architects, who are expected to make a great display at a low cost. That objection to wood involves the use of plaster or cement on metal lathing or on concrete slabbing, which is, incidentally, a drawback to rapid construction, though obviously advantageous in arresting the spread of fire. Concrete slabs were used in the construction of the Globe Theatre at Earl's Court to assure sufficient stability in that case.

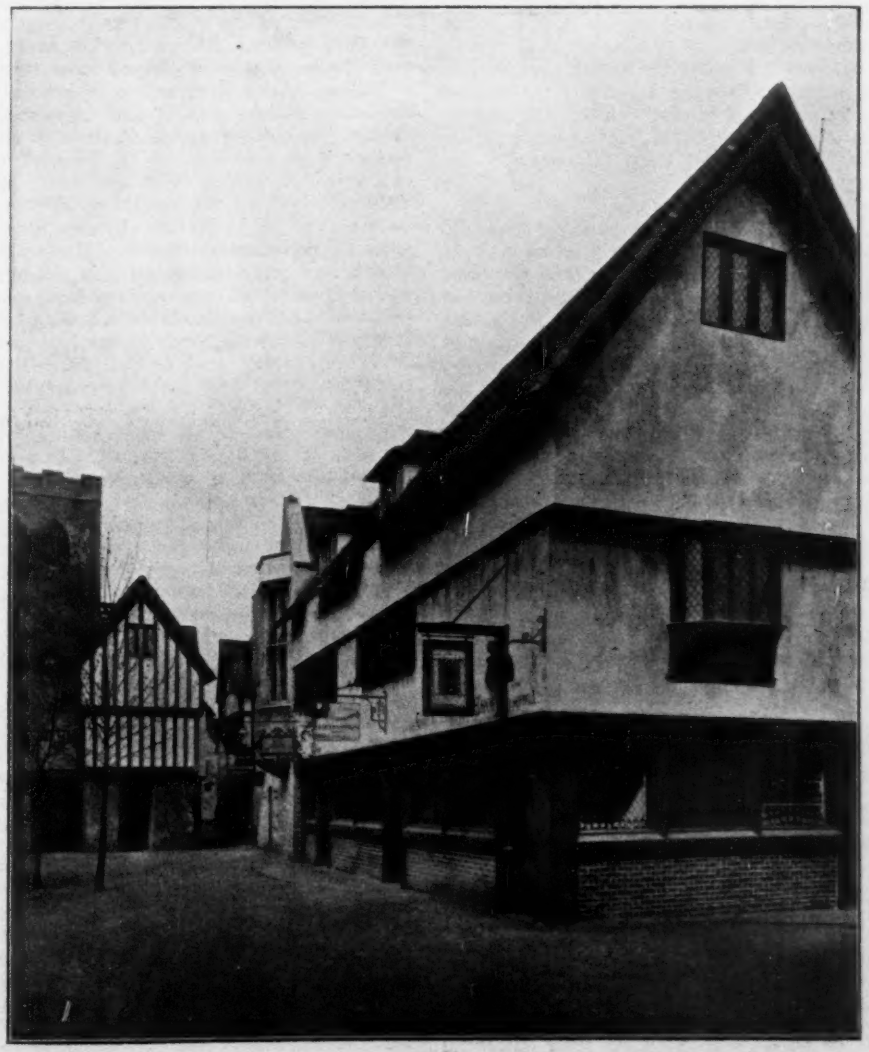
In this article it is not proposed to describe steel-framed buildings, nor the many curious kinds of structure known as joy wheels, gravity rides, and other mechanical devices which the public have been trained to expect and enjoy at exhibitions after they have sufficiently exhausted themselves by gazing at commercial exhibits. So strongly built are some of these steel-framed structures and devices that it would really not be unreasonable to regard them as permanent structures, thus dispensing with the annual fees for inspection and the renewal of licences.

The class of building to which attention is specially drawn here, and which is illustrated by some examples from "Shakespeare's England," is that intended for one or two seasons only, in which the use of wood framing is reluctantly permitted, covered inside and out with plaster or other approved fire-resisting material. Of all possible materials fibrous plaster is the cheapest and most adaptable, particularly when other materials have to be imitated. In thin slab form for flat surfaces, or cast in gelatine moulds for ornamental and relief work of any description, it can be made and fixed by nails or screws with great rapidity. As to its durability, if painted annually with two coats of oil colour it will stand the weather for many years, as may be seen by the external plaster of the Imperial Arcade, a last remnant of the Indian Exhibition erected seventeen years ago. Its triumph was most definitely recognised in London when Mr. Imre Kiralfy opened that delightful exhibition, though Birch's old English Village at South Kensington a few years previously was a revelation to those who had not realised the wondrous virtues of fibrous plaster. Several kinds of vegetable fibre have been successfully adopted to reinforce plaster. In the plasterer's clause of an ordinary specification long cow-hair is usually demanded, but it is rarely supplied in sufficient quantity. It is an important means of reinforcement, the absence of which causes the failure of many ceilings in private houses. Cows'-hair is too costly for use in the acres of exhibition plaster. In America the long thin grass of the prairie is often used. Nearly twenty years ago, at Earl's Court, a Dutch firm of plasterers had delivered to them a load of hay, supposed to be for bedding down their men, who were to sleep in the grounds. Instead of being used in that way it was chopped up as fibre for their plaster. Any misgivings on the subject were needless, for that plaster in the Empress Theatre is to-day as good as ever it was.

Mr. E. L. Lutyens, whose skill as an architect of permanent work has won for him the admiration of his professional brethren and other people of discernment, was commissioned by Mrs. George Cornwallis-West to design "Shakespeare's England" at Earl's Court on a portion of the exhibition grounds leased to her company by Earl's Court, Ltd. That distinguished and enterprising lady could not have chosen an English period of greater attraction, nor one combining more happily architectural, historic, and literary interests. Mrs. Cornwallis-West succeeded in infecting all her workers with something of the spirit of those splendid Tudor days, and, in her own personality, seemed to revive certain characteristics of the Elizabethan period. In this connexion it may be noted that her own private administrative offices are on the ground floor of a fine old Tudor building, removed from the quay at Ipswich and re-erected next the Old Welcome Club in the Western Gardens of the exhibition.

The picturesque lay-out of that portion, formerly known as the Queen's Court of the exhibition grounds, with which Mr. Lutyens was chiefly concerned, if carefully examined, shows great ingenuity, not only in the ample footways left for public use, affording delightful vistas in all directions, but in the arranging, spacing, and scale of the buildings represented and in adapting them for the use of exhibitors. Several of the older plaster-faced buildings are completely hidden behind the present new façades, recalling many of the finest examples of architecture, both early and late Tudor, which adorned England when Queen Elizabeth, Leicester, Burleigh, Drake, Bacon, and Shakespeare were living realities. Among other sources of information Mr. Lutyens was able to avail himself of the measured drawings and photographs contained in Garner and Stratton's book on "Tudor Domestic Architecture," Gotch's "Early Renaissance," and the Architectural Association "Sketch-books."

Accuracy of detail was evidently a strong point, and the plasterwork bears close inspection in that respect, partly due no doubt to the contractors, Messrs. Humphreys, Ltd., of Knightsbridge, who have an unrivalled experience in the technique of exhibition work. Great pains were taken to imitate closely what must have been the



Exhibition Buildings at "Shakespeare's England."

condition and colour of the buildings in those Tudor days, not merely as we see some of them now centuries later. This is a point which appeals to antiquaries but does not strike superficial observers, who have been heard to remark on the new appearance of some of the Elizabethan counterfeits, forgetting that at the time represented they actually were new. To complete the illusion thoroughly, the scenic artist has been carefully guided in his work, in order to produce correct impressions, and generally the colour brush has contributed the right tone and texture. Mention should be made, too, of the appropriate metal inn-signs and lanterns made by Mr. Starkie Gardner, of the wooden signposts and stocks, and the Tudor galley constructed by Messrs. Gill & Reigate, under the supervision of Mr. Seymour Lucas, R.A.

The framed wood construction used in the buildings is not particularly complicated. After making allowance for the temporary nature of these structures and the substitution of machine-cut deals of ordinary scantlings, the skeleton framing is not vastly different to the covered or exposed framing of old "half-timbered" buildings. Of course, experience, as in other building matters, enables the constructor to decide quickly what is best to be done, either beforehand or as the work proceeds. The height and area of each structure, together with the requisite rigidity and stability, are factors which influence the sizes of timbering used, which is, of course, not affected by the material that the plaster surface is meant to resemble.

The sectional-perspective views, given on one of our Plates in this issue, indicate, in a general way, one method of wood-framing, and show how flat plaster slabbing and ornamental and projecting plasterwork are attached to it.

The delicate oak tracery and the carving of the oak cornices and barge boards of such buildings as the Porch House, Potterne and Ford's Hospital, Coventry, are beautifully reproduced in plaster, such things as slender mullions being backed up by deal supports wherever liable to damage. The plaster "oakwork" is generally tooled over on the surface to imitate the texture of the original material, and is carefully tinted and grainde flat. Where oak timbering is flush with the plaster, as at the Porch House and the Shakespeare's Head building, it has to be merely indicated by colour.

To obtain the nearest reality to an old wavy tiled roof, a mould in gelatine is made of some old roof tiling *in situ*, and the same process can be adopted for reproducing old brickwork. When the plaster in the mould is dry it is ready for removal and fixing in sections, and pointed to make good the joints. Another way is to construct some tiling to the desired appearance or build up a section of brickwork from which to obtain moulds. Merely to paint brickwork on a flat surface of plaster would not produce so good an effect, though that expedient may be adopted in cheap work or when situated at a considerable distance from the eye.

The examples reproduced at Earl's Court from Ashby St. Ledgers, Leicester's Hospital, the Trinity College Fountain, Ledbury Market Hall, Staple Inn, and Exeter Guildhall, besides others, show the plaster treatment of surfaces to represent stonework, helped as faithfully as the scenic painter can manage it in colour, the closeness of resemblance being, in skilful hands, largely a matter of price.

In reproducing old work or presenting novel designs and fitting them into the scheme of an exhibition the draughtsman plays an important part. Photographs, sketches, and visits to the originals assist him to prepare the necessary drawings, which expert plasterers can be relied upon to carry out sympathetically. The art of designing, construcing, and decorating exhibition buildings is, however, not a simple affair, so all connected with "Shakespeare's England" are to be congratulated on their successful achievement at Earl's Court.

PARIS NOTES.

PAINTERS will presently be no longer able to claim the distinction of having a picture in the Luxembourg. It has been ordained for some years that the present galleries shall be utilised for the accommodation of historical archives for the convenience of the Senate (it will be remembered that the old Palais du Luxembourg, of which the picture-galleries formed the Orangery, is now the Palais du Sénat). The permanent exhibition of works by contemporary artists which constitutes the Luxembourg collection is presently to be removed to the former Séminaire of St. Suplice, a building in the immediate neighbourhood of the present galleries. A movement meanwhile has been started among artists and others for the purpose of retaining the galleries of the Luxembourg for the exhibition of pictures and works of sculpture, the promoters of this scheme claiming that the galleries of the Grand Palais are insufficient for all the requirements of the annual art exhibitions.

The Paris authorities have at last set on foot a scheme for the lay-out in gardens of the ground on the borders of the Seine between the Pont des Invalides and the Pont d'Alma in the Cours la Reine, which has remained waste ground since the exhibition of 1900. The site is well known to students of French architecture, because it faces the famous François premier house which was transferred from Moret, near Fontainebleau, in 1826, to its present position in the Cours la Reine. François I., according to some authorities, caused this building to be erected for the reception of Diane de Poitiers; it is designed in the style with which the name of François premier is associated, with a suggestion of Venetian work—probably a reminiscence of the sovereign's predatory excursion into Italy. The new grounds are to be surrounded by an iron railing for the better protection of the plants and flowers, which suggests a somewhat unpleasant commentary on the conduct and manners of the Paris public. In our London parks no such protection is considered necessary.

Talking about gardens, it is interesting to note that the Société des Amateurs de Jardins is seeking to celebrate the third centenary of the birth of Le Nôtre by an exhibition of garden craft and art. It is proposed to hold the exhibition next year in the Pavillon du Marsan (by arrangement with l'Union Centrale des Arts Décoratifs). It will be largely retrospective in character, including plans and engravings of Du Cerceau, plans of Le Nôtre and his school, garden furniture of the same period, gardens of the XVIIIth century, and so on. It will also comprise vases and statues, examples of treillage, and the decorative features generally which have been employed in garden architecture by past-masters of the art. In view of the fact that Le Nôtre was invited to England by Charles II., an invitation which it is generally believed he accepted, and that he may have been responsible for the disposition of the grounds of St. James's Park, for alterations at Hampton Court, and the gardens of other royal residences in or about London, the forthcoming exhibition should not be without historic interest to English visitors.

The classification of certain buildings, after proper and authoritative representation, as monuments of historic interest is one of the most useful regulations for the protection of past works of architecture which the French Government has at its command. The monastery of Chartreuse has, since the decree which disbanded the religious Orders in France, fallen into a state of dilapidation and disrepair. The present building, which superseded an older structure, and is of later date than 1676, does not possess many features of architectural interest, but what remains is worth preserving. Its recent classification by the Commission des Monuments Historiques will ensure the present stability of the buildings and their future preservation.

AN INTERNATIONAL COMPETITION.

THE conditions of a new international competition for architects have just come to hand. They present some interesting and attractive features and some drawbacks. The buildings in question are a Royal Palace and a Palais de Justice at Sofia. So far as the first building is concerned it is suggested that the style "Belvedere" should be adopted, and to remove any doubt from the mind of any intending competitor what this style precisely represents a supplementary document provides the further information that, by the use of the expression the style "Belvedere," the idea intended to be conveyed is that of a building *de belle apparence*, with terraces, verandahs, balconies, etc., from which may be enjoyed a pleasant view of the surroundings. The term immediately brought to mind the little jewel of a palace in the Baroque style, with a touch of French Renaissance, at Vienna, although there are many other palaces on the Continent which bear this name. The Viennese type must have also suggested the term to those responsible for drawing up the conditions, for in the supplementary document to which we have referred this building is particularly indicated as an example of the style which it is desired to see chosen by the competitors. Probably the royal predilection entered into the matter of the choice of styles. For the Palais de Justice, on the other hand, *un style classique, sérieux et sobre* is recommended. Intending competitors will be provided on request with plans of the site and levels on which it is proposed to construct the buildings, as well as with photographs of their position and surroundings. In addition to these a list of the prices of materials and the cost of labour will be provided. The premiums are for the Royal Palace—1st prize, 10,000 francs; 2nd, 7,000 francs; 3rd, 4,500 francs; 4th, 2,500 francs. For the Palais de Justice—1st prize, 6,000 francs; 2nd, 4,000 francs; 3rd, 2,500 francs; 4th, 1,250 francs. The juries to be appointed for making the awards are variously constituted, but they include in each instance various high Ministers of State whose offices are associated either with the Royal Palace or the Palace of Justice, and three architects from the Ministry of Public Works, an architect appointed by the Bulgarian Association of Engineers and Architects, and three foreign architects. The foreign architects, who are to be chosen from Vienna, Paris, and Milan, are to be appointed by the architectural societies of these cities. Great Britain and Germany are not apparently taken into account. The conditions nevertheless seem, on the whole, fair and reasonable, with some exceptions which are, however, of the utmost importance. They contain nothing to indicate the scale of remuneration for the architect who secures the work, or even that it shall be given to the winner of the first premiated design. Further, it is stipulated that all the premiated designs shall become the property of the Ministry of Public Works, and that the jury shall have the option of purchasing any of the unpremiated *projets* for, in the case of the Royal Palace, 4,000 francs, in that of the Palais de Justice, 2,500 francs, which suggest points of interest that might be successfully utilised in the carrying out of either scheme. These final provisions will, we imagine, considerably reduce the number of competitors.

LAND TRANSFER.

At the annual provincial meeting of the Law Society, held at Cardiff this week, Mr. J. S. Rubinstein read a paper on "The Land Transfer Problem: Registration of Deeds or Registration of Titles." It was contended that the County Councils throughout the country should be empowered to establish local registries of deeds similar to the Deed Registries now existing in the counties of Middlesex and Yorkshire, the profits of the registries to be applied, as in Yorkshire, in aid of the rates.

OLD HOUSES, CATHERINE-COURT, GREAT TOWER-STREET, E.C.

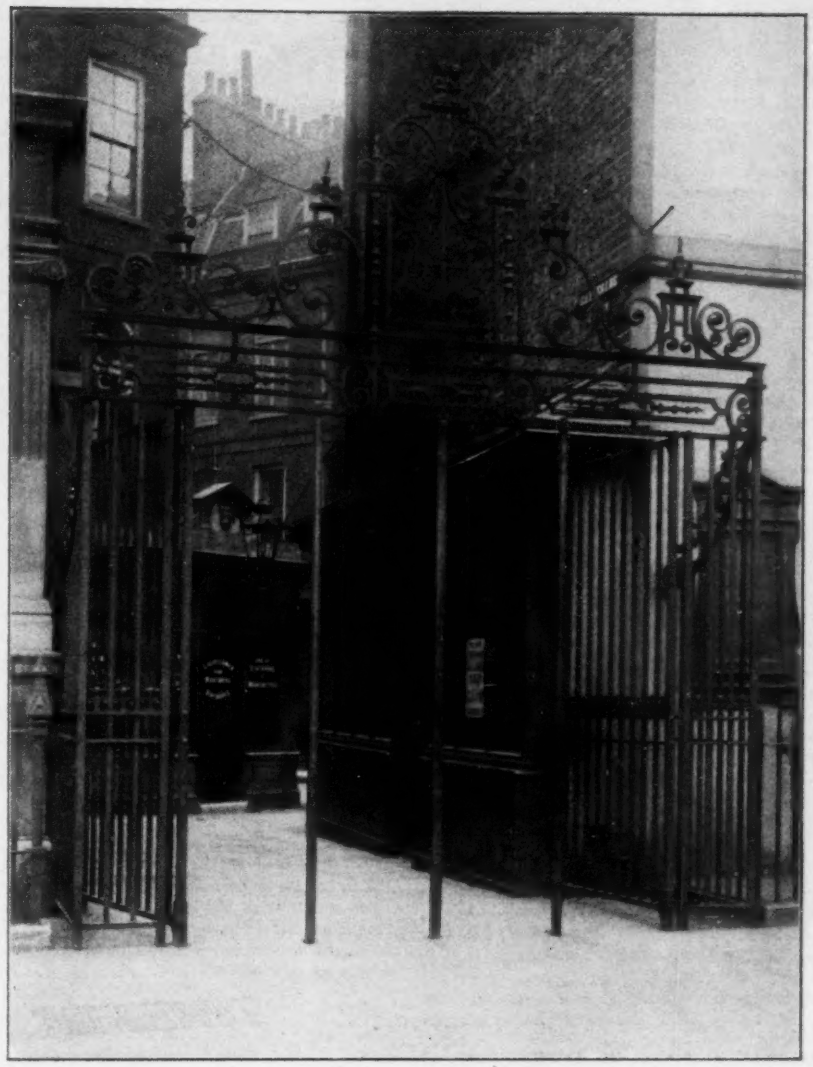
THESE illustrations are from photographs of houses and ironwork in Catherine-court, Great Tower-street, to be pulled down for the new offices of the Port of London Authority.

Catherine-court, which connects Trinity-square with Seething-lane, is situated just behind Mark-lane Station. It was built in 1723 and named after the Czarina of Peter the Great, who visited England 1716–17.

The Russian Embassy had their offices close by (in Muscovy-court). The houses of the court are typically Georgian, and were formerly used as dwelling-houses. They are now split up into offices in the heart of the wine trade. The present iron gateway of the court was erected about eighteen years ago; the remains of the original gateway are preserved on one of the walls inside the court.

Every Trinity Monday the Brethren of Trinity House, including the Prince of Wales, who is one of the Brethren, pay their annual visit to St. Olave's Church, Hart-street, and pass through Catherine-court.

Samuel Pepys lived for thirteen years near by, in a house in Seething-lane, connected with the Navy Office.



Entrance to Catherine-court from Trinity-square, E.C.

Nos. 3 & 4, Catherine-court, Great Tower-street, E.C.

GENERAL NEWS.

Professional Announcement.

Mr. H. W. Ford, architect, has removed to new offices at 11, Old Queen-street, Westminster, and his telephone number will be Victoria 4474.

Appointment.

Mr. T. Herbert Whittaker, A.R.I.B.A., of Nottingham, has been appointed Chief Architectural Assistant to the county of Hereford.

Guildhall Improvement Scheme.

The Court of Common Council will consider on a special day the proposals to alter the buildings adjacent to the Guildhall. The scheme of Mr. Sydney Perks, the City Surveyor, which was illustrated in the *Builder* last week, is estimated to cost about 100,000*l*.

Victoria and Albert Museum.

The Department of Engraving, Illustration, and Design, of the Victoria and Albert Museum, has recently acquired, by purchase, a large number of original studies by the late Frederick Shields, for his well-known illustrations to Bunyan's "Pilgrim's Progress." When published, in the "Sixties," they received high praise from Rossetti and other artists, as well as from John Ruskin. Two original pen-drawings by the late E. A. Abbey, R.A., have been given to the Museum by Mrs. Abbey; Mr. Stanhope Forbes, R.A., has given eleven etchings by the late Mrs. Stanhope Forbes.

Oxford Colleges.

Mr. B. T. Batsford will publish in November an important folio volume on "The Old Colleges of Oxford," by Mr. Aymer Vallance, M.A., F.S.A. The book has been in preparation for some years, and is dedicated by special permission to his Majesty the King. The author's scheme is to trace the architectural history of the University church, the old schools and the colleges, exhibiting them in the condition in which they stand at the present day, as well as many vanished features, depicted by famous contemporary artists from the XVIth century onward. Care has been taken to include among the illustrations a large number of fine specimens of the splendid craftsmanship in ironwork, lead and plaster, in engraved brasses, painted glass, and figure sculpture, with which the ancient fabrics abound.

Mediæval Figure Sculpture.

An "Account of Mediæval Figure Sculpture in England," by Mr. E. S. Prior, the Slade Professor of Fine Art in the University of Cambridge, and Mr. Arthur Gardner, will be published shortly by the Cambridge University Press.

University Extension Lectures.

Among the courses of University Extension lectures which are now beginning, those to be given by Mr. Banister Fletcher, F.R.I.B.A., on "Ancient" and "Mediæval" Architecture promise to be of special interest. The lectures will be delivered in the British Museum and in the Victoria and Albert Museum. Particulars may be had from the Hon. Secretary, 10, Woburn-square, W.C.

The Northampton Institute, Clerkenwell.

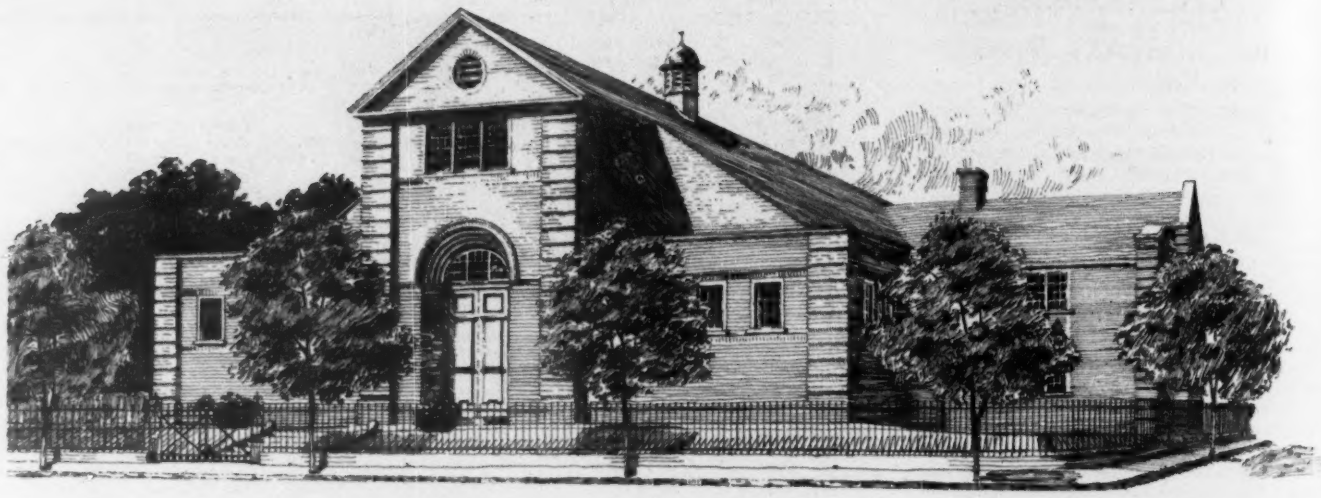
The new session of the Northampton Polytechnic Institute opens on the 30th inst. Day and evening classes are held in a variety of subjects, full particulars of which are now published. Mr. C. E. Larard, A.M.Inst.C.E., is head of the mechanical engineering department, and Mr. R. Mullineux Walmsley, D.Sc., M.I.E.E., Principal of the Institute, directs the Electrical engineering department. The artistic crafts section is under the care of Mr. John Williams, with Mr. N. Vanderlyn as Chief Assistant.

The Polytechnic, Regent-street.

The Polytechnic School of Architecture and Surveying, which is recognised by the Board of Architectural Education of the Royal Institute of British Architects, and by the Board of Education, reopens on the 30th inst. The President of the School is Sir Aston Webb, R.A. Full particulars will be sent on application to the Director of the Polytechnic, Regent-street.

The day department is under the control of Mr. G. A. Mitchell, A.R.I.B.A., and the curriculum is based on the suggestions of the Board of Education and the recommendations of the Board of Architectural Education. The

Relic of Old Iron Gateway, now fastened to Wall of Catherine-court, Great Tower-street, E.C.



Design for St. George's Parochial Building, Hornsey. By Mr. H. Kenchington, A.R.I.B.A.

full course covers a period of three years. The school has many successes credited to it during the last seven years, its past students including a Gold Medallist at the Schools of the Royal Academy. The evening school is intended for those preparing for the various professional examinations and for the craftsman in the various building trades. Mr. Charles Mitchell, M.S.A., is the Headmaster.

The Engineering School attached to the Polytechnic is under the direction of Mr. Henry J. Spooner, M.I.Mech.E., A.M.Inst.C.E., with Mr. Charles Hawksley as President.

DESIGN FOR ST. GEORGE'S PAROCHIAL BUILDING, HORNSEY.

THIS design was submitted in a recent limited competition by Mr. Herbert Kenchington, A.R.I.B.A.

The situation of the site at the corner of two important roads suggested an approach from each. By taking advantage of the rapid fall of the ground towards the north-east corner the kitchen and the retiring-room were planned on the ground floor and the small hall on the first floor without increasing the height of the roof above that of the main hall. Over the main entrance was placed the cinematograph-room, approached from the outside over the flat roof of the cloak-rooms.

The materials suggested were red bricks, with buff terra-cotta dressings, and the roof covered with Old Delabole slates.

BOOKS.

County Churches, Suffolk. By T. HUGH BRYANT. In two volumes, with illustrations. (London: George Allen & Co., Ltd., Ruskin House. 1912. 2s. 6d. each net.)

TO ANYONE making a survey of the churches of Suffolk these two little volumes will be welcome. They note the main characteristics of each church, and point out features of special interest in the fabric, and, where they have been allowed to remain the fittings, altar plate, and other objects of interest are noted. As some 530 old churches are described, the notes are necessarily condensed, but they are well arranged in alphabetical order under the rural deaneries as they exist at the present time.

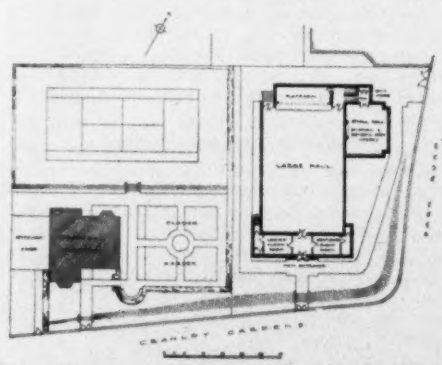
Much the same was done for the diocese of Exeter as far back as "the forties." Many of the finer churches are illustrated by means of good photographs, and we notice with satisfaction that the illustrations only are printed upon calendered paper, thus making the books easy to handle and light to carry.

English Mediæval Architecture. In two parts. By CYRIL E. POWER, A.R.I.B.A. (London: Talbot & Co. 2s. 6d. each net.)

THE subject-matter of these books, as the author points out, "was delivered originally as a series of lectures on Mediæval Architecture." They contain a vast amount of information and over 400 diagrams and illustrations from line drawings in the text and eight plates from photographs, the whole bound in a handy and compact form. In this respect we regard them as a marvel. Whether such an achievement has been accomplished without detriment to their usefulness is a question. As a synopsis to a course of lectures—and as such we must regard them—the subject-matter would fulfil a most useful purpose. Without the amplification which this matter no doubt received in the course referred to, we confess we find ourselves at a disadvantage when we endeavour to do justice to so painstaking an enterprise. Take an instance—not a very important one, but taken at random—a reference (on p. 495) to the little church of Clymping, Sussex:—"In Saxon work, as at Bradford-on-Avon, the transept is little more than a porch. At Worth, and formerly at St. Pancras, Canterbury, the feature becomes much more important, yet built as adjuncts and subordinate to the nave. So also in the XIIIth century at Clymping and Achurch." No reader would gather from this that the "adjunct" on the south side is the tower of the church, which, belonging to the Norman period, is therefore not an adjunct at all. No attention is called to the unusual position of the tower, recalling the important example of Exeter, although a plan of the church is given some pages further on, an arrangement of plan and reference which we note to be inconveniently frequent. The reference we have quoted was no doubt made clear when extended in lecture form, but we cannot help feeling it to be inadequate and unconvincing as it stands. Information given in so condensed a form will, however, no doubt appeal to the student with examination tests in view and further means of reference at hand. The title, too, is somewhat misleading in view of the fact that the all-important developments of castellated and domestic building are not touched upon. English Mediæval architecture embraces much more than church building, and the reader consequently puts the books down with an unsatisfied feeling. He also finds no acknowledgment of the sources from which the greater number of the illustrations are drawn.

Company Transfer Work: A Practical Guide to Share Registration and Transfer Work. By J. A. WHITE. (London: Effingham Wilson. Pp. 108. 2s. 6d. net.)

THE author of this little work, who is the Assistant Secretary to the Associated Portland Cement Manufacturers (1900), Ltd., has compiled a guide, as the result of his own practical experience, on the subject of registration and transfer in connexion with limited companies, which, we should imagine, should prove useful to those concerned with this class of business.



Design for St. George's Parochial Building, Hornsey.

British Standard Specifications for (1) *Cast-Iron Spigot and Socket Soil Pipes, and* (2) *Cast-Iron Spigot and Socket Waste and Ventilating Pipes.* Publications Nos. 58 and 59, respectively, of the Engineering Standards Committee. (London: Crosby Lockwood & Son. August, 1912. Price 5s. each net.)

THE Engineering Standards Committee have issued two further specifications dealing with soil and with waste and ventilating pipes.

In the Preface to each the Committee call attention to the desirability of making the internal diameter of the pipe agree with the nominal size. The departures from this rule which have been made from time to time for various usually quite insufficient reasons have led to much confusion and annoyance.

The specification in each case requires a slight reduction from the present London County Council allowance for caulking space in the sockets of pipes from 4½ in. to 6 in. diameter, which is decidedly an improvement. The thickness is kept uniform for all sizes, and agrees with the present London requirements except in the case of the smaller soil pipes; these under the new standard will be $\frac{1}{16}$ in. thicker than heretofore. This also is a desirable modification in view of the risk of slight eccentricity of the core in casting.

Each specification is accompanied by full details and tabulated dimensions for the various sizes of pipe, and for a number of the more usual fittings, including bends of various radii, access doors, swan-neck bends, branches, diminishing pieces, inspection pieces, collars, shoes, and holder bats.

In the body of the specification we notice what appears to be an oversight which might well be altered in the next issue.

It is required that the interior of the pipes and fittings be galvanised or "be coated with Dr. Angus Smith's . . . composition." It should be required that the pipes be "treated by Dr. Angus Smith's process," which is quite another matter, as it involves the heating of the pipes and much greater expense. The common use of the phrase now embodied in the new standard specifications has permitted the use of pipes which literally comply with its provision, and has, we believe, been the origin of a good deal of dissatisfaction. This, however, is the only point we notice which would be better altered; in all other respects we hope the standards laid down will meet with that general acceptance which their reasonableness would justify.

BOOKS RECEIVED.

REDRESS BY ARBITRATION. By H. Foulkes Lynch. (London: Effingham Wilson. 5s.)

ENGLISH AND WELSH CATHEDRALS. By J. D. Atkinson. (London: Methuen & Co. 10s. 6d. net.)

ILLUSTRATIONS.

Alexander Thomson Studentship.

THIS studentship, value 60*l.*, is offered triennially by the trustees, the Glasgow Institute of Architects. In the recent competition Mr. James Bennett was successful, and his design is illustrated on one of our Plates.

The Royal Opera House, Malta.

IT is barely fifty years ago that the Opera House at Malta was built. It may seem premature, therefore, to place it in the category of those worthy to be measured, but it is an interesting building in a variety of ways, and it seemed to Mr. Collis desirable that the opportunity should not be neglected to record its features. The architect was Edward Middleton Barry, R.A., who, like his more eminent father, was responsible for many important buildings in London and elsewhere. Like other successful architects before and after him, he found fault with his times and wished he had chosen another career. In spite of his undoubted genius for architecture, he found many of the problems of his profession very difficult to adjust. His failure to be chosen as architect of the Law Courts and the non-realisation of his design for a new National Gallery caused him much disappointment.

Born in 1830, Edward M. Barry was a student at King's College, London, and then entered the office of T. H. Wyatt. In due time he became assistant to his father, and remained employed thus until the death of Sir Charles in 1860 at his house on Clapham Common. Meanwhile the son had earned an independent reputation by his reconstruction of Covent Garden Theatre after the fire of 1856, and in consequence of the success of this work he was appointed by the Government to erect the Opera House at Malta. He was engaged on the Palace of Westminster from 1860-70 in succession to his father. Elected an Associate of the Royal Academy in 1861, he attained to membership in 1869. He was Professor of Architecture from 1874 till his tragic death at a Council meeting at Burlington House in 1880, and during the same period was Treasurer to the Royal Academy, an office which has been held always by an architect, with the exception of J. C. Horsley, father to Mr. Gerald Callcott Horsley, F.R.I.B.A. The present Treasurer is Mr. T. G. Jackson.

The Opera House at Malta was illustrated in the *Builder* in 1863, when it was in course of construction, and the following extract from the accompanying article may be quoted :—

"The new Opera House at Malta is one of several important public works for the embellishment and improvement of the island which have marked the rule of the present Governor, Sir Gaspard le Marchant, Bart. It is situate at the entrance of Strada Reale, the principal street in Valetta, and has been designed by Mr. Edward M. Barry. The auditory will contain ninety private boxes in four tiers, accommodating, with pit, stalls, and gallery, upwards of 1,200 persons. As land in Valetta is exceedingly valuable, the ground floor of the theatre under the side corridors, and also the lower part of the terrace in front are occupied by shops; and, according to Maltese custom, residences are provided in the building for the principal artistes. Special arrangements have been devised to withstand the heat of the climate, and fresh air will be conducted to all parts of the house. The saloon, or crush-room, is placed over the entrance hall, and has five windows, with balconies overlooking the terrace. The painting-rooms and the necessary workshops are in the roof, which is constructed of queen trusses of a span of 64 ft.; the queen posts are carried up to support an attic with louvre windows and bold projecting eaves. The building is being constructed of the excellent stone of the island."

"Shakespeare's England."

THE interesting buildings which form an attraction to the present Earl's Court Exhibition, and of which we give illustrations on one of our Plates, are referred to in the article beginning on p. 348.

R.I.B.A. Problems in Design.

BOTH Mr. Prestwich and Mr. R. F. Dodd, whose designs were published in our issue of last week, were students at the School of Architecture of the University of Liverpool.

MEETINGS.

FRIDAY, SEPTEMBER 27.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. C. Porter on "Duties of a Sanitary Inspector: Offensive Trades and Trade Nuisances." 7 p.m.

SATURDAY, SEPTEMBER 28.

The Institution of Municipal and County Engineers.—East Midland District meeting at the Town Hall, Ilkeston.

MONDAY, SEPTEMBER 30.

Royal Sanitary Institute.—Dr. Charles Porter on "Infectious Diseases." 7 p.m.

University of London (Victoria and Albert Museum).—Mr. Banister Fletcher on "Review of Mediæval Architecture." 5 p.m.

TUESDAY, OCTOBER 1.

Royal Sanitary Institute.—"Methods of Disinfection," by Mr. J. Priestley, B.A., M.D. 7 p.m.

WEDNESDAY, OCTOBER 2.

Royal Sanitary Institute.—"Water: Composition, Pollution, and Purification," by Mr. J. Priestley, B.A., M.D. 7 p.m.

The Institute of Sanitary Engineers.—Opening sessional meeting at Caxton Hall, Westminster. 7.30 p.m.

THURSDAY, OCTOBER 3.

University of London (British Museum).—Mr. Banister Fletcher on "Introduction to Ancient Architecture." 4.30 p.m.

FRIDAY, OCTOBER 4.

Royal Sanitary Institute.—"Elementary Statistics," by Mr. J. Priestley, B.A., M.D. 7 p.m.

COMPETITION NEWS.

A list of current Competitions is printed on page 366.

Legislative Buildings, Winnipeg.

We learn by cable from Winnipeg that Mr. F. W. Simon, F.R.I.B.A., has been successful in this important competition. Mr. Leonard Stokes, the assessor, selected the authors of five preliminary designs to compete finally. The chosen competitors were Messrs. E. & W. S. Maxwell, Montreal; Messrs. Sharp & Murray, Toronto; Messrs. Brown & Vallance, Montreal; Messrs. Clemsha & Portnall, Regina, East; Mr. F. W. Simon, Liverpool.

The successful competitor is in practice in this country and is well known for his individual work and for his association with Mr. Huon A. Matear, F.R.I.B.A.

Fire Brigade Station, Cardiff.

The design of Messrs. E. Vincent Harris & T. A. Moodie, London, has been placed first by the assessor, Mr. A. Marshall Mackenzie, A.R.S.A. Messrs. Ivor Jones & Percy Thomas, Cardiff, have been awarded the second place (75*l.*); Messrs. Mangnall & Littlewood, Manchester, the third (50*l.*); and Messrs. Willmott & Smith, Cardiff, the fourth (25*l.*). The designs will be shown at the City Hall, Cardiff, October 2-9.

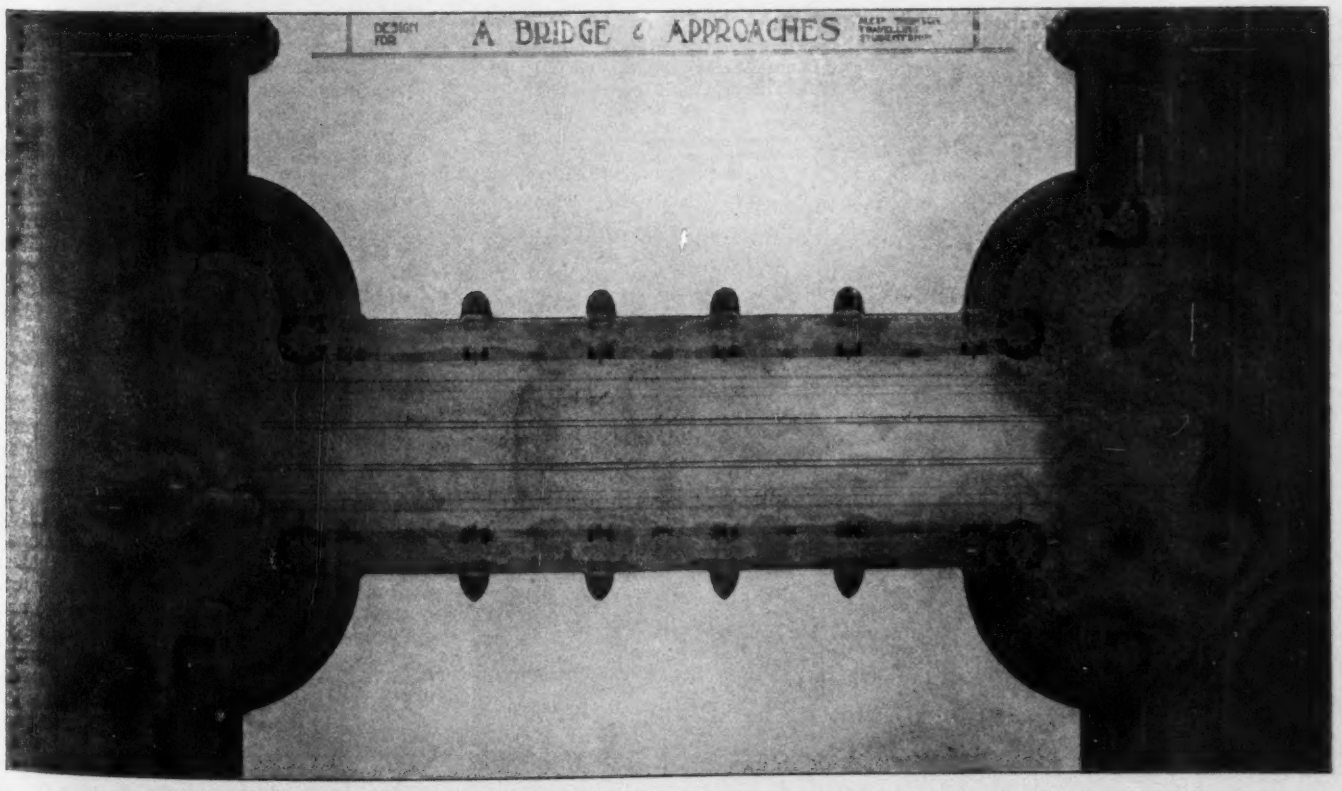
CORRESPONDENCE.

Architecture, Commercialism, and Public Rights.

SIR,—Your article on the above in last week's issue I read with interest and consider your views on the subject to be eminently sound.

The question of advertisement has grown to such an extent of late that we now have to treat it as one of the necessary evils of the modern business life. As regards the building itself as a means of advertisement, I think we generally find that attention is arrested by either a very good or a very bad design.

While agreeing that the bad design arrests attention, such attention is not that which the building owner desires, for it is never that of



Alexander Thomson Travelling Studentship, 1912. Awarded to Mr. James Bennett.

admiration, and I think this in itself will ere long bring its own reward. The thing that "lives" and bears the test of time is the only one that "pays" in its fullest sense.

I agree that "it would be often wrong to blame the building owner's architect for a bad design," though he should not always get off scot-free. Clients expect their architect to advise them, and when his advice is given in a tactful and proper manner, I have found by experience that it is generally of some use. The architect having planned his building to the satisfaction of his clients' practical needs should not be fettered on the question of design by his client, who cannot be expected to view the matter in the "broad" sense necessary to a good design.

Your remark as to the "unpleasing shop window used as a mark of distinction by a firm of restaurant proprietors," I am in entire accordance with, but can it be possible that, as a means of advertisement, it is more effective than the shop windows and fittings recently adopted by a well-known firm of booksellers and newsagents? Yet the latter are by no means offensive; on the contrary they are a good solution of a very difficult problem.

So much for the "complaint," upon which we are at one, but what of the remedy? I agree with what you have to say as to the sympathy of the large landowner if we are to attain to a higher plane of street architecture, but your remark applies equally to the small landowner, for the remedy should be applied all round if it is to be effective.

We have, however, I think, to look further afield for our remedy of the present unfortunate state of affairs.

The approval of plans for buildings on land is at present generally restricted to the local authority and the freeholder's surveyor. The former views them from the point of view of its by-laws—often in themselves bad—and the latter from the point of view of their being a "commercial asset" to his client. Both are right in their respective spheres, but neither of them touch the point we want. We shall never, I think, get our street architecture into line until such new schemes have to be approved by an authority, to be set up, in the form of a "Tribunal of Art," which body would approach such new schemes entirely from the point of view of design in its broadest sense, *i.e.*, in themselves good and appropriate to their surroundings; there should then be harmony, without which nothing but chaos can reign.

Such a tribunal might consist of, say, three architects and artists of repute, acting together and in co-operation with the local authority, who would then have the entire responsibility for, and interest in, its own district, which should belong to it by right. At present if any local authority be approached on the question, it will generally be found sympathetic, but reply, "We have no power over design."

If such a course were followed, another section of the community would have become interested, and so by degrees the public generally would lend its sympathy and support, without which, after all, we cannot progress far. It would certainly take some time to accomplish a complete change from the present bad state of affairs, but not longer than it has taken us to get into it.

HERBERT A. WELCH, A.R.I.B.A.

INTERCOMMUNICATION COLUMN.

A Two-Story Building Defined.

SIR,—I shall be greatly obliged if you will kindly give me an answer to the following questions—What is a two-story building? How many floors does it contain, including ground floor (a non-basement house)? Thanking you in anticipation, E. J. WEYMOUTH.

[*** We do not know if any subtle reason caused our correspondent to ask the above questions. While we do not wish to be involuntary parties to a betting decision or building dispute, we hope it is not indiscreet to offer the suggestion that, in a general way, a two-story building, without a basement, contains two floors, that is to say, a ground floor and a floor over it, which may be wholly or partly in the roof, or may have a flat roof. As the inquirer writes from an address in the Metropolitan area, the following definitions of the London Building Act, 1894, Part I., Clause 5, may interest him:—

"(11) The expression "ground story" means that story of a building to which there is an entrance from the outside on or near the level of the ground, and where there are two such stories, then the lower of the two:

Provided that no story, of which the upper surface of the floor is more than 4 ft. below the level of the adjoining pavement, shall be deemed to be the ground story.

(13) The expression "first story" means that story of a building which is next above the ground story, the successive stories above the first story being the second story, the third story, and so on, to the topmost story.

(14) The expression "topmost story" means the uppermost story in a building, whether constructed wholly or partly in the roof or not."

We assume the questions do not involve consideration of the height of the building, the heights of the stories, nor the thickness of walls, which are points dealt with in the first schedule of the same enactment.—ED.]

ENGINEERING SOCIETIES.

The Institution of Municipal Engineers.

At a meeting of the Council held on September 18 the following applicants were recommended for admission:—

To membership:—Mr. R. L. Price, Surveyor, Dawley Urban District Council; Mr. T. Rosbotham, Surveyor, Southport, Birkdale, and West Lancs Water Board; Mr. H. Plewes, Surveyor, Thorne Rural District Council.

To Associate membership:—Mr. S. F. Deacon, Chief Assistant, St. Mellons Rural District Council; Mr. R. E. Miles, Assistant Engineer and Surveyor, Horbury Urban District Council; Mr. H. E. Morris, Surveyor's Office, Hendon Rural District Council; Mr. F. J. Felts, Borough Surveyor's Office, Cambridge; Mr. G. H. Thomas, Assistant Surveyor, Llanelly Urban District Council.

Transfer to membership:—Mr. F. Britton, Surveyor, Dore Rural District Council; Mr. G. E. Mathews, Engineer and Surveyor, South Holland Drainage Trust.

Under the new by-laws these elections will be ratified at the next Council meeting if no written objections are lodged within fourteen days.

The annual meeting will be held in London on October 11 and 12. Various papers will be read and visits will be paid to places of interest.

FIFTY YEARS AGO.

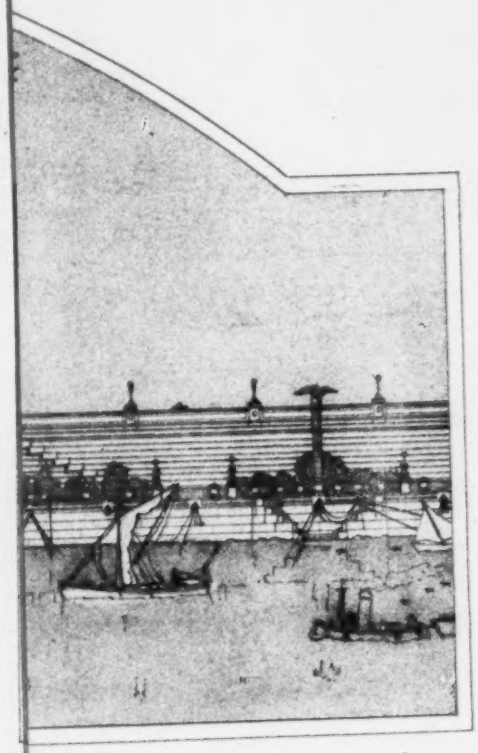
From the *Builder* of September 27, 1862.

Our Bridges.

THERE is scarcely a city founded upon a navigable river, and occupying space on both margins, that has not, according to it extent, more free bridges than London. We have in a two-mile course of stream, from the Houses of Parliament to the Customs, five bridges for traffic, with one footway suspended space; and of these only three are free to the public! Paris can boast of no less than fifteen bridges in the same extent, and *without a toll;* and yet who would compare the amount of commercial intercourse required by either community? We have nearly the one-third portion of the metropolis on the southern margin of our river. In Paris, the Seine makes a more equal division; but the flow of the Thames, which describes an arc of a circle, requires yet more increased facilities of intercommunication. On the north bank the course from London to Westminster Bridge is nearly three miles; whilst the south traverse is scarcely a mile and a half. A stranger visiting the Surrey side, having taken his notes from the Tower to Hyde Park-corner, could hardly account for the dusky, gloomy, and staid aspect of Southwark and Lambeth. There appears to be neither unity nor community in these heterogeneous parts; but, if he be a Parisian, he at once discovers that the peculiarly English system of *toll bridges* is the cause of suspended animation.

*** The "suspended animation" referred to in the above paragraph could scarcely now form a matter of complaint with regard to the traffic, whether pedestrian or vehicular, of our London bridges. But since it was written the tolls have happily been done away with. The Metropolitan Toll Bridges Act of 1877 required the Metropolitan Board to extinguish the tolls on all the Thames bridges. Within the last fifty years the bridge accommodation across the Thames has been largely increased either by the addition of new bridges or the substitution of new and more ample structures for the old. Blackfriars Bridge was opened in 1869, Albert Bridge in 1873, Wandsworth Bridge in 1880, Battersea in 1890, the Tower Bridge in 1894, and the new Vauxhall Bridge in 1906. Paris, within the same period, has not shown the same activity, partly because it has not had to meet the same necessities and partly because its river was already well supplied with bridges. The Pont Alexandre Trois, which was opened in 1900, easily eclipses anything that has been done either in London or any other capital in the way of beautiful bridge architecture. We are not inclined to agree with those who draw comparisons between the two capitals to the disadvantage of London; but it would be absurd not to acknowledge that in questions concerned with the improvement of Paris, the French authorities show, in some respects, a more enlightened policy than that which prevails in this country. —ED.

The Royal Opera House, Malta. (*See page* 353.)



DESIGN FOR

A BRIDGE APPROACHES

ALEXR THOMSON TRAVELLING STUDENTSHIP

"INK-PHOTO" SPRAGUE & Cº LTD 69 & 70, DEAN STREET, SOHO, W.

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WELCH, A.R.I.B.A.

UNICATION
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E. J. WEYMOUTH.

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SOCIETIES.

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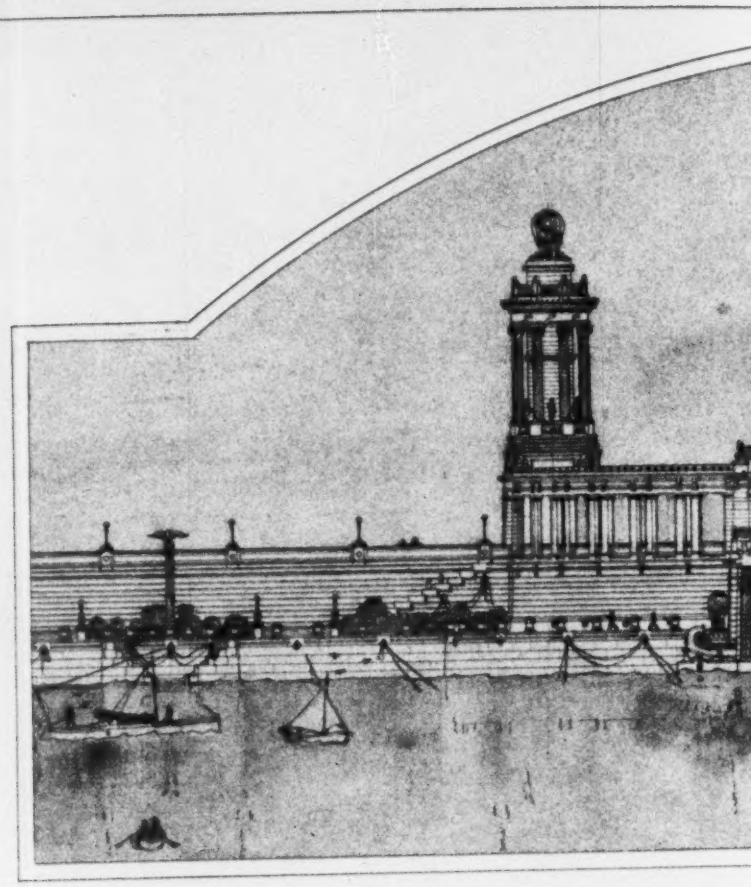
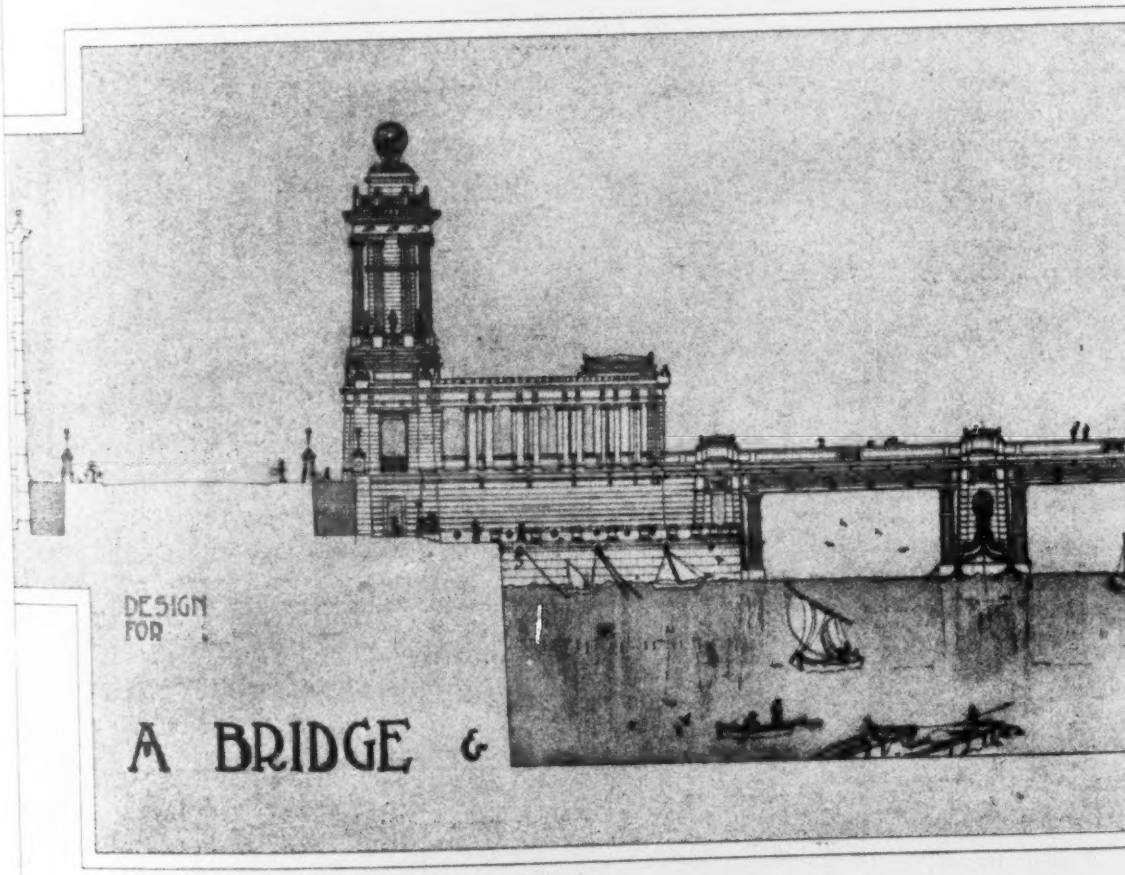
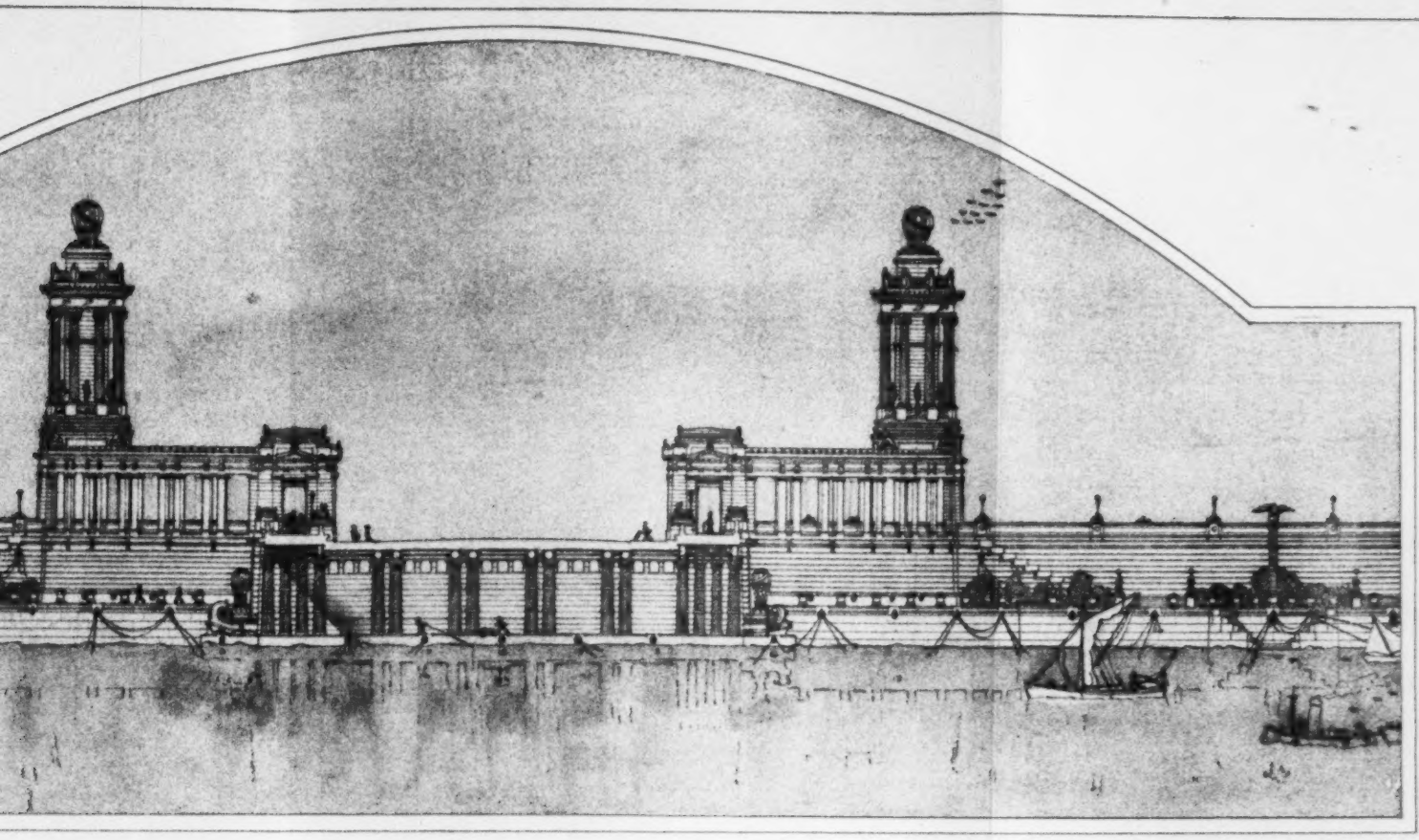
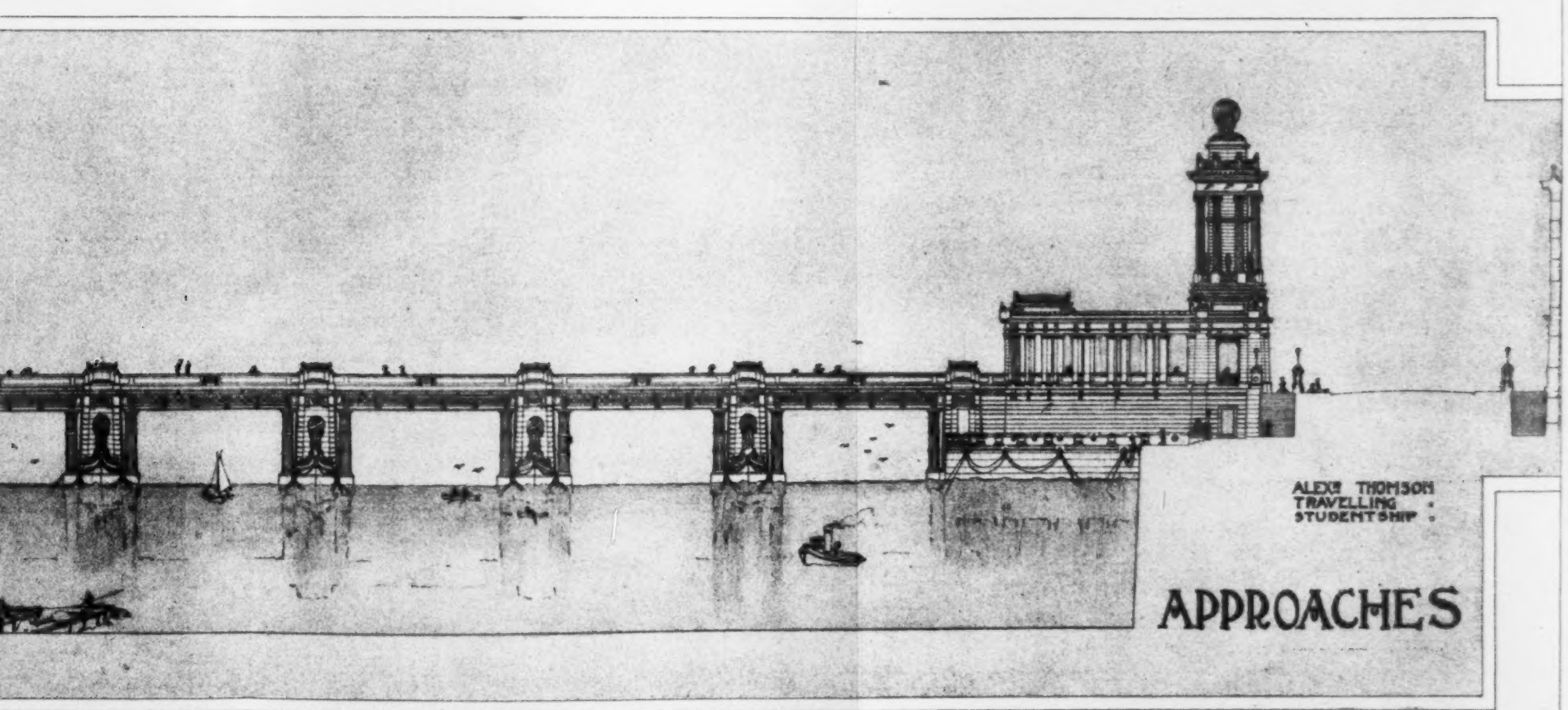




ALEXANDER THOMSON

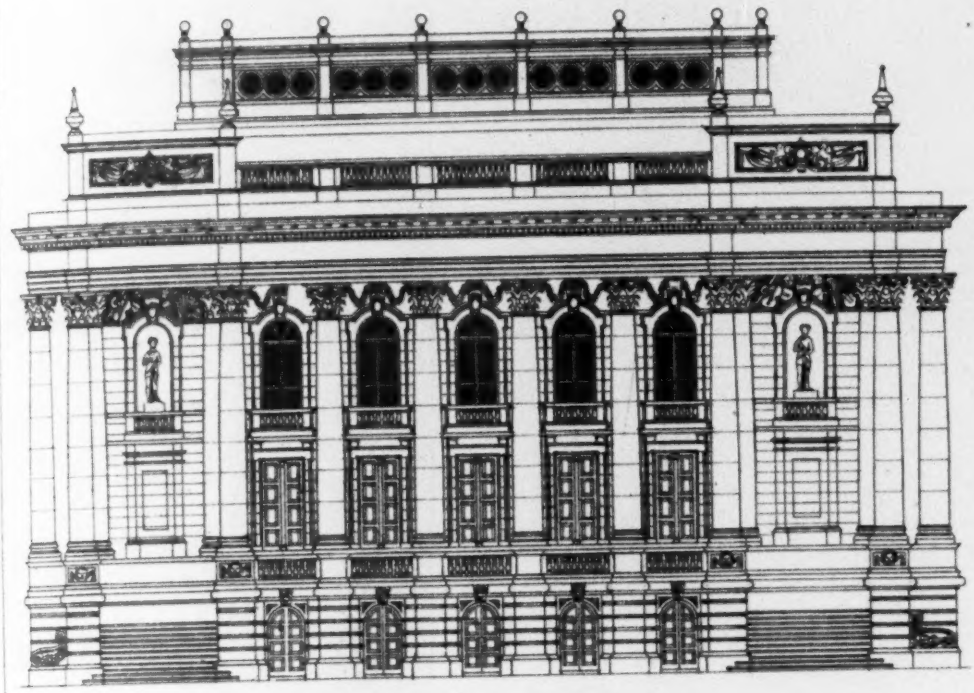




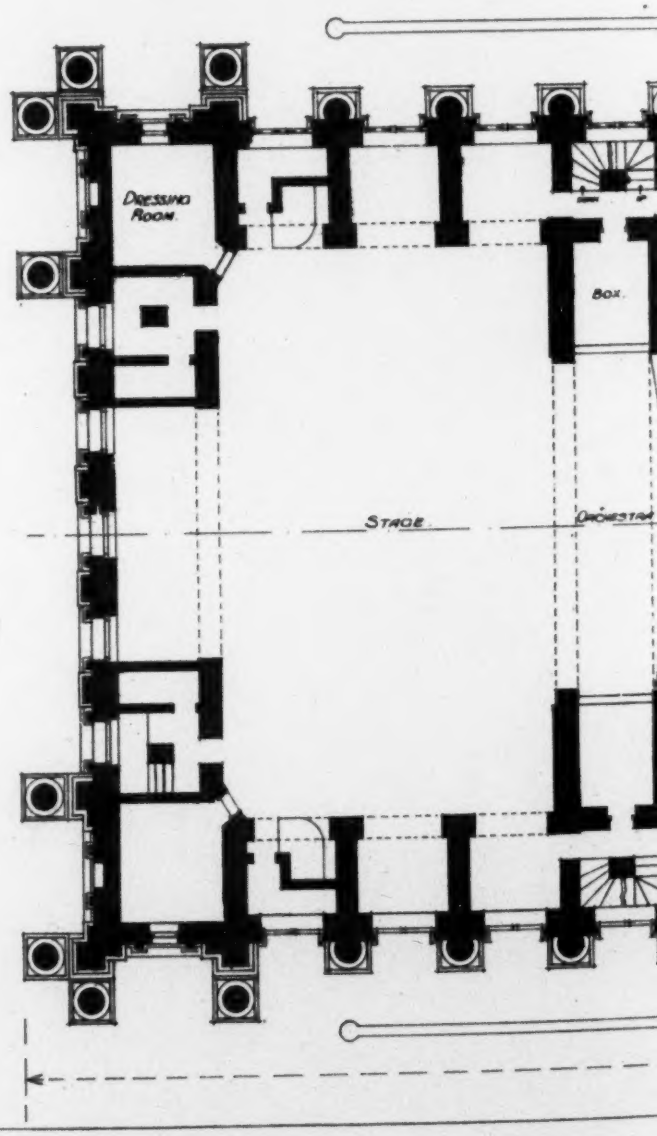
FEET FEET.

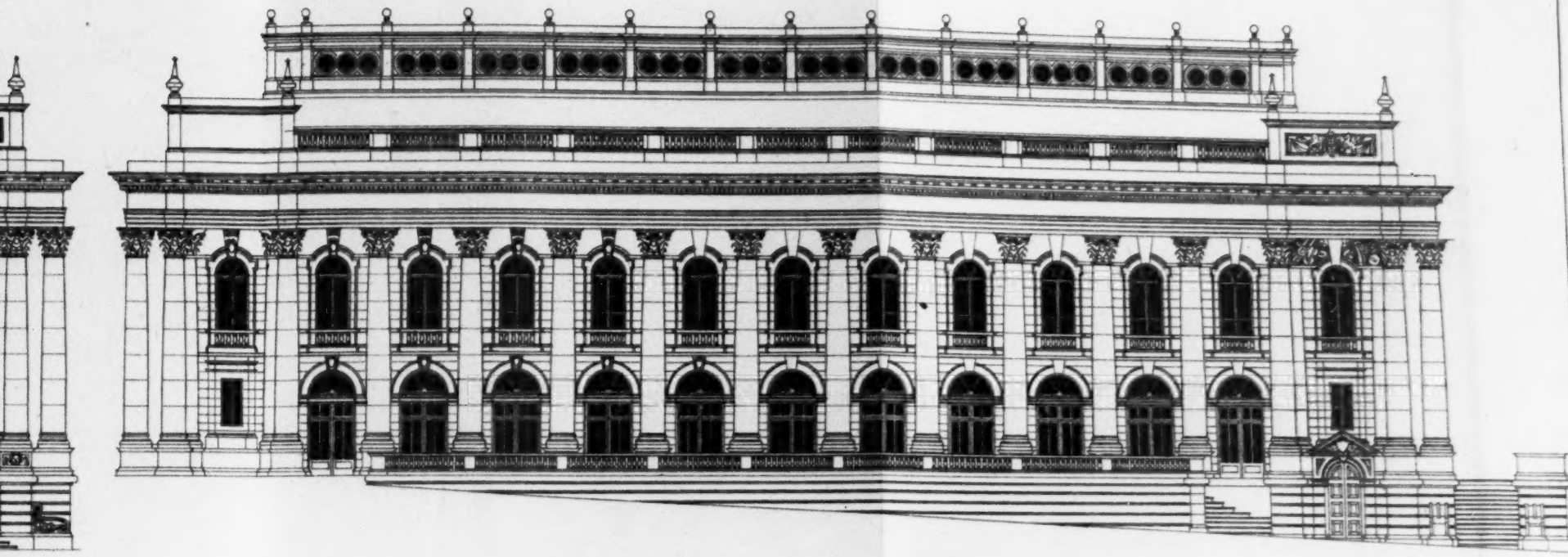
"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

LEXANDER THOMSON TRAVELLING STUDENTSHIP, 1912.—AWARDED TO MR. JAMES BENNETT.

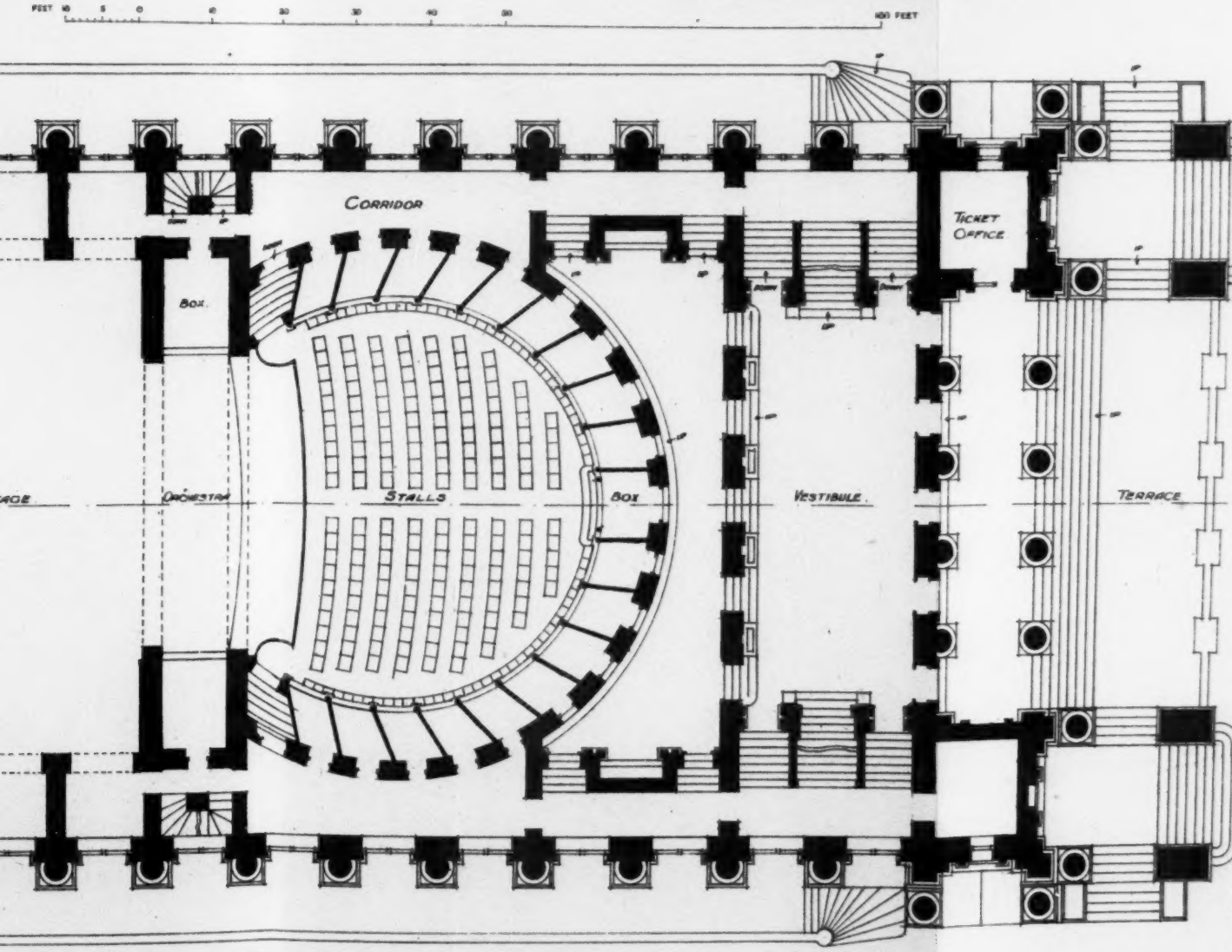


FRONT ELEVATION





SIDE ELEVATION

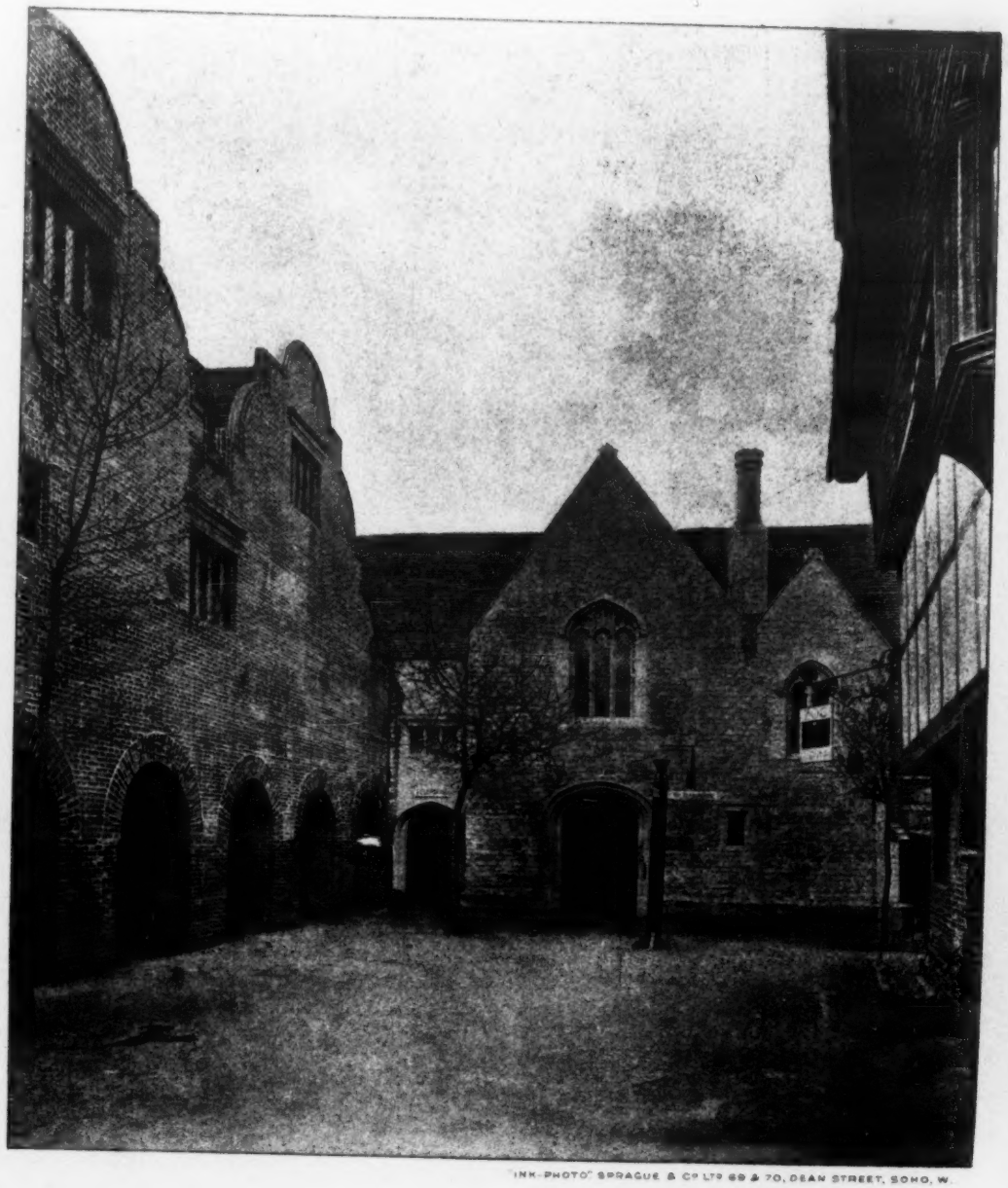


GROUND FLOOR PLAN

MEASURED & DRAWN BY
J.H. COLLIS Oct. 1911.

PHOTO-LITHO. SPRAGUE & Co. LTD. 68 & 70, DEAN STREET, SOHO, W.

THE ROYAL OPERA HOUSE, MALTA.



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"SHAKESPEARE'S ENGLAND"

VIEWS OF TEMPORARY BUILDINGS AT EARL'S COURT EXHIBITION.

SECTIONAL SKETCHES OF

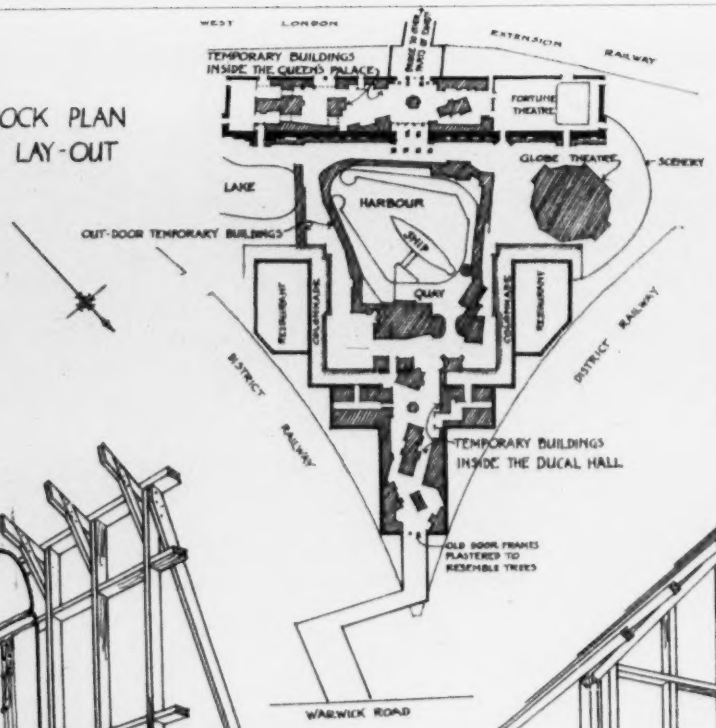
"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

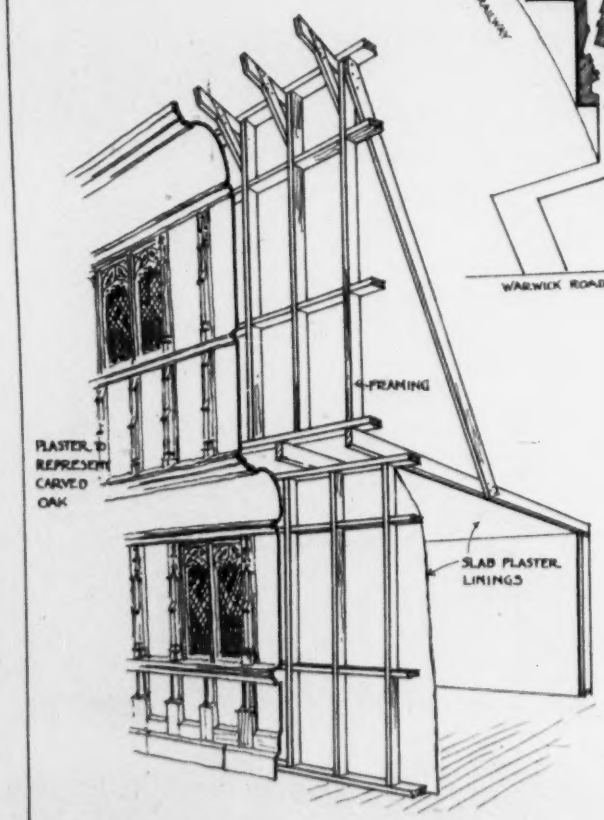
"SHAKESPEARE'S ENGLAND"

VIEWS OF TEMPORARY BUILDINGS AT EARL'S COURT EXHIBITION.

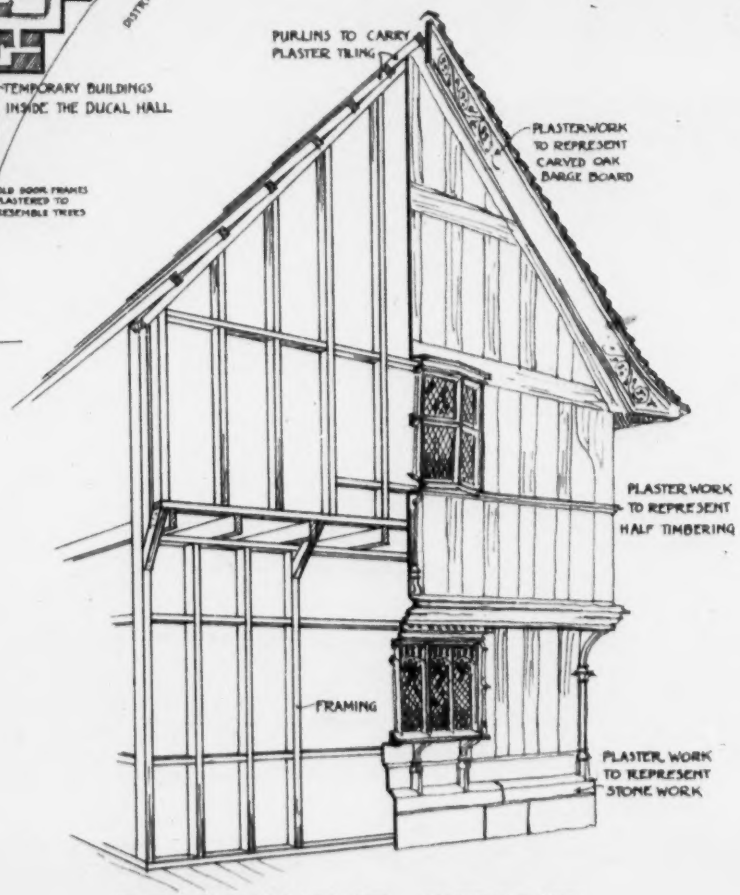
SECTIONAL SKETCHES OF TEMPORARY BUILDINGS AT "SHAKESPEARE'S ENGLAND" AT EARL'S COURT. 1912.

BLOCK PLAN OF LAY-OUT

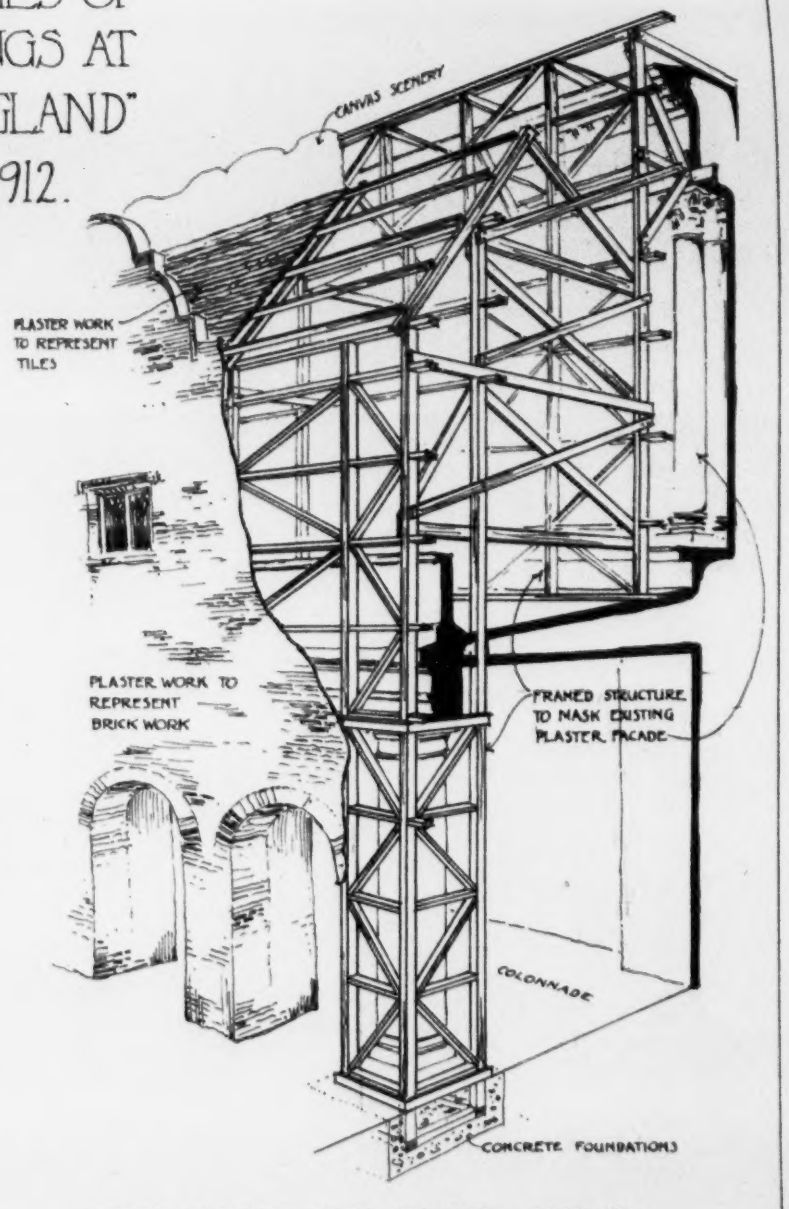




FORD'S HOSPITAL, COVENTRY.


PURLINS TO CARRY PLASTER TILING
PLASTERWORK TO REPRESENT CARVED OAK BARGE BOARD
PLASTER WORK TO REPRESENT HALF TIMBERING
FRAMING
PLASTER WORK TO REPRESENT STONE WORK

THE PORCH HOUSE, POTTERNE

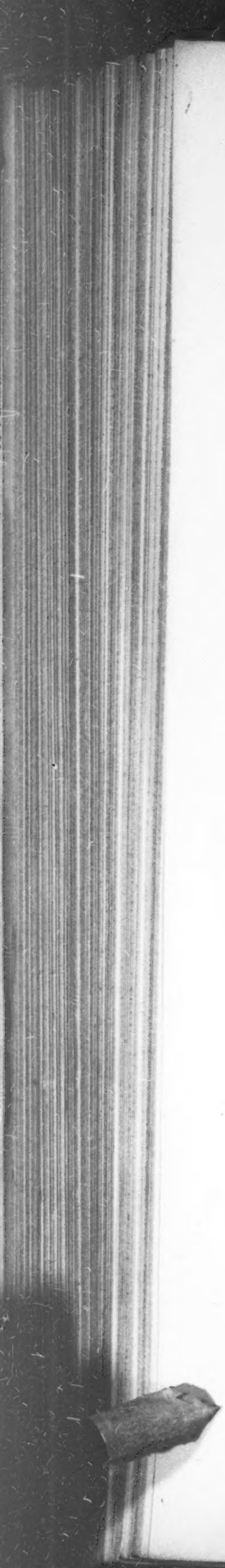


BRICK FACADE WITH SHAPED GABLES

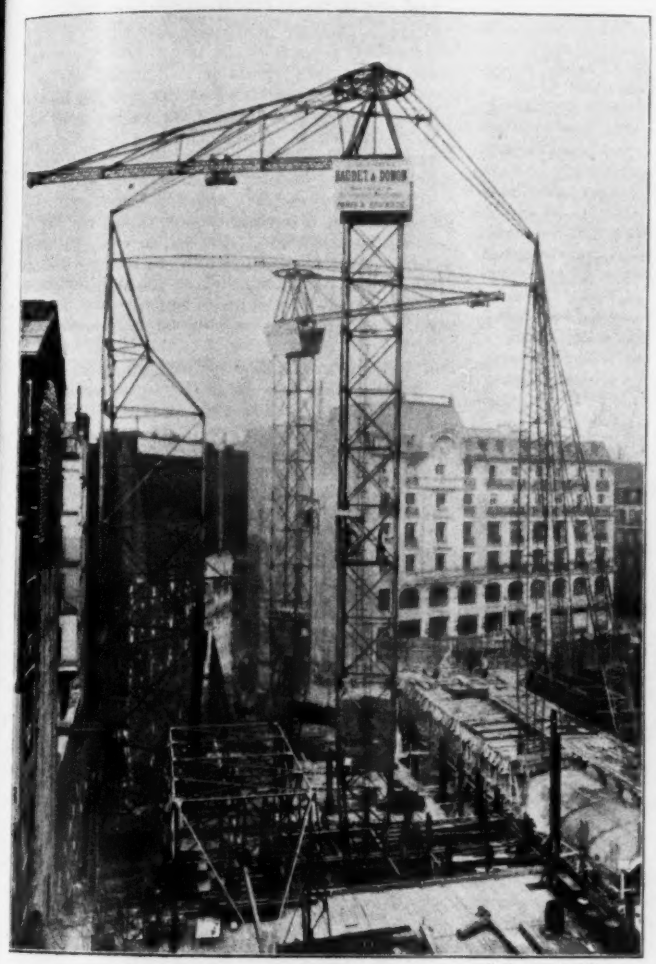
EXAMPLES OF TEMPORARY WORK INSIDE A BUILDING

EXAMPLE OF OUT DOOR TEMPORARY WORK

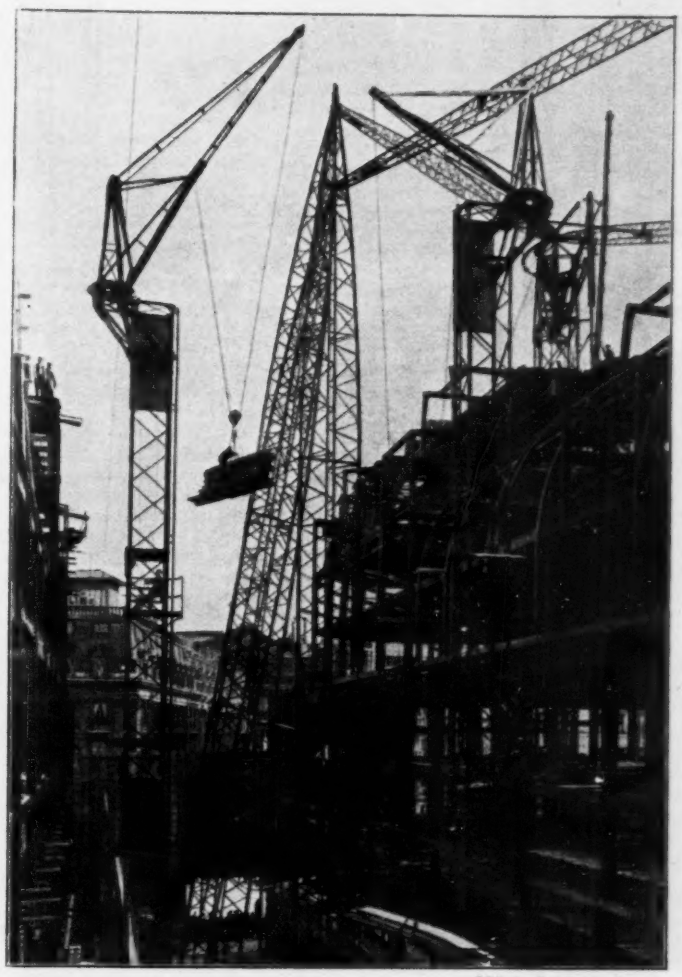
PHOTO-LITHO. SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.



MONTHLY REVIEW · *of* · ENGINEERING.



[*Photo. by Colas.*



[*Photo. by Demoulin.*

Fig. 1. Derricks in Operation in the Rue des Italiens, Paris. Fig. 2.

CONJUGATE DERRICKS FOR THE ERECTION OF STEELWORK: RUE DES ITALIENS, PARIS.

IN a previous issue (February 9, p. 153) we described and illustrated the structural and architectural features of the buildings erected on either side of the new street in Paris known as the Rue des Italiens.

The steel skeleton of the block at the left hand of the street has two façades, one of 28 metres on the Boulevard des Italiens, and one of 61 metres on the Rue des Italiens. The party wall separating the building from No. 32, Boulevard des Italiens is nearly at right angles to the line of the boulevard for a length of 36 metres, thence following an irregular polygonal contour causing the width of the site to diminish towards the upper end.

As most of the apartments in the new building had been let even before construction had been commenced, the time allowed to the contractors for erection was very short considering the large amount of work to be done, and it was indispensable that powerful construction plant should be installed for the erection of the steel skeleton within the stipulated period.

In order to obviate the employment of scaffolding or staging of the kind generally used in building construction, the contractors, Messrs. Baudet & Donon, arranged with Messrs. Louis Perbal & Cie., of Nancy, for the installation of two conjugate derricks, each capable of being rotated through a complete circle.

The type of derrick in question may be described as a perfected form of the ordinary derrick, the main objects of the inventor having been to provide facilities for commanding a maximum area and to avoid the necessity for the encumbrance of the building site by staging of the usual character.

Instead of being capable of angular movement to the extent of only about 200 deg., as in the case of an ordinary derrick, the new type of crane can be rotated through a complete circle, and turned round and round in either direction as often as may be desired.

As shown in Fig. 3, each derrick consists essentially of a vertical shaft pivoted at the top and bottom and carrying near the upper end a horizontal arm furnished with rails for a travelling carriage from which the loads to be hoisted and otherwise dealt with are suspended by means of wire ropes and the usual tackle.

The vertical shaft is a latticed steel structure tapering to a point at each end, the bottom bearing supported on a foundation block in the ground, and the top bearing carried by two latticed steel stays disposed at an angle of 60 deg. apart in plan so as to be capable of resisting either tension or compression according to the direction in which the rotating arm of the derrick is moved, and made of strength sufficient for withstanding flexure due to the action of the wind and the dead weight of the construction.

The stays are slightly inclined to the horizontal, the outer end of each being supported by a steel tower. In the case of a single derrick these towers are generally in the form of sheer legs with one vertical member and two inclined members.

The double or conjugate derricks of the type erected at the Rue des Italiens require only two supports for the four stays carrying the upper pivot bearings, as represented in Fig. 4, where it will be seen that the two stays meeting over the Rue des Italiens are supported by a sheer leg tripod, and that the other two stays meeting near the party wall next to No. 32, Boulevard des Italiens, are carried by a light steel tower, triangular in plan. This tower was tapered to a point at the upper end so as to provide clearance for the passage of the rotating arms of the derricks.

As the top bearing of each rotating shaft is above the horizontal arm from which the loads are suspended, it will be readily seen that there is nothing to prevent the complete and continued rotation of the arm in either direction.

All forces acting upon the derricks, whether due to the loads suspended or to the pressure of the wind, give rise to resultant forces upon the upper stays and the points of support.

Consequently, according to the direction of rotation and of the wind each leg of the tripod and each main vertical of the triangular tower works alternately in tension and in compression.

Therefore it is necessary that the foundation blocks for the supports should be constructed so as to be able not only to distribute pressure on the soil at suitably reduced intensity, but also to withstand forces tending to lift them from their beds.

The form and general arrangement of the supports for the conjugate derricks employed at the Rue des Italiens was decided by the following considerations:—

1. The requirement that the new street should be opened to traffic, connected with the erection of the buildings, before the derricks

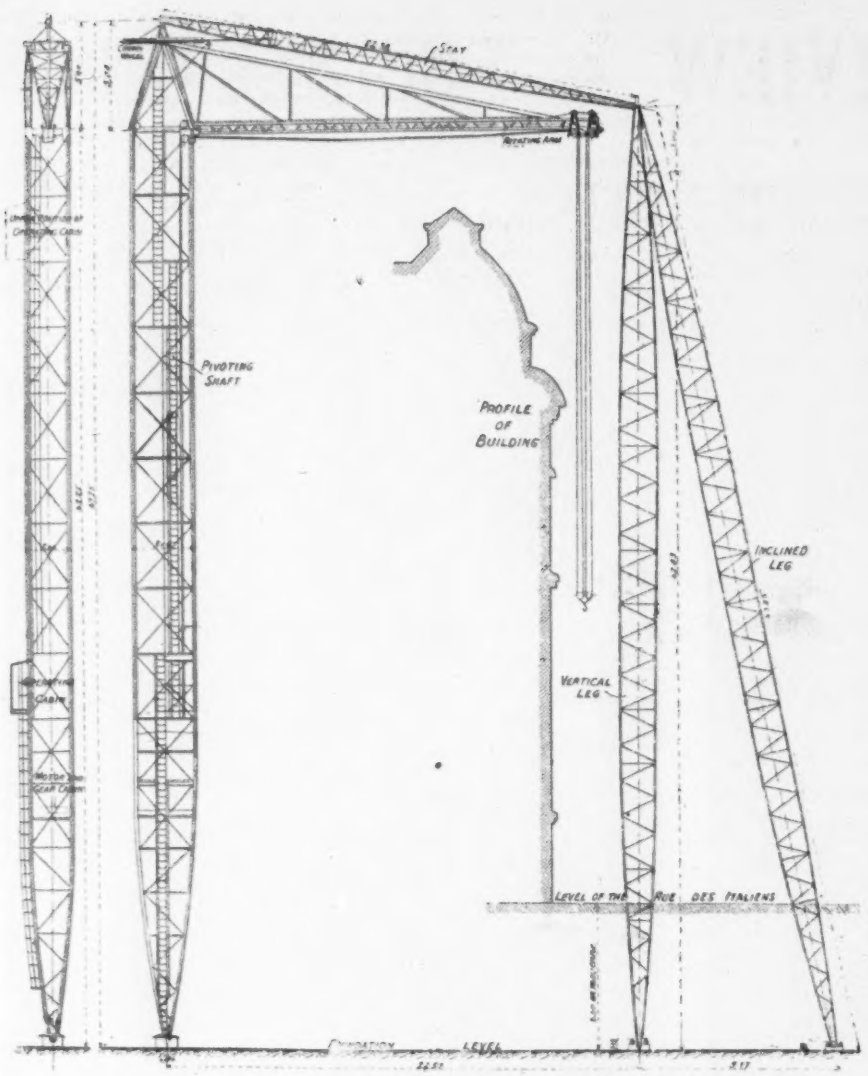


Fig. 3. Elevation of Derrick: Rue des Italiens, Paris.

(From *Le Génie Civil.*)

could be dismantled and removed from the site, and

2. The desirability of avoiding interference with the erection of steelwork on the site of the left-hand block of buildings.

The first consideration clearly indicated the sheer-leg type of support as the most suitable, because the space between the vertical and inclined legs would permit the circulation of traffic on the new roadway, while the second consideration led to the adoption of a compact vertical tower offering far less obstruction to steelworkers than the wide spreading legs of a tripod support.

In selecting the positions for the three vertical posts of the tower and in determining the positions of the bracing members for the same structure, care was taken to place all of them between the stanchions and girders to form part of the steel skeleton, the bracings being placed as far as possible so as to come between the successive floor levels. Thus, after removal of the derricks the only permanent members of the skeleton to be fitted were a few floor joists.

Thanks to this arrangement, it was possible for the contractors to place all important members of the steel frame in position by means of the conjugate derricks, the result being a considerable saving of time and expense.

All the movements necessary for the operation of each derrick are controlled by one man from the operating cabin shown in Fig. 3. The cabin is fitted like the cage of a lift on the rotating shaft and can be raised as work progresses to enable the mechanic to command a view of the entire site throughout the conduct of building construction. The motor and gear cabin is built inside the rotating shaft below the bottom position of the operating cabin.

The means of control provided in each of the latter enable the attendant to regulate the traversing movement of the carriage running backwards and forwards on the horizontal rotating arm, the rotatory movement of the derrick, the hoisting and lowering movements, and changes of speed for the hoisting gear.

The traversing movement of the carriage on the horizontal arm and the rotation of the vertical shaft are effected by means of an electric motor of 6 kilowatts capacity supplied with continuous current at 220 volts pressure, and arranged so that the two movements can be performed separately or simultaneously as desired. The carriage is traversed by means of an endless wire rope proceeding from the motor and gear cabin to the top of the rotating shaft, passing over a guide pulley there, proceeding thence along the horizontal arm, making connexion with the carriage and returning to the cabin.

The rotation of the derrick is effected by another endless wire rope passing over guide pulleys and around the crown wheel at the top of the rotating shaft, this wheel being of 4 metres diameter and grooved for reception of the wire rope. The crown wheel is fixed to the shaft, which is moved in the required direction by the pull of the endless rope.

For hoisting purposes, a second electric motor of 9 kilowatts capacity is fitted in the cabin, where the hoisting cable is wound about a drum.

The following particulars will enable our readers to form an idea of the capacity of the derricks, and their convenience for the execution of structural work :—

Diameter of circle commanded by each rotating arm, 40 metres.

Height of rotating arm above ground level—Derrick No. 1, 42 metres; Derrick No. 2, 39 metres.

Time required for complete rotation of arm, 4 minutes.

Traversing movement, per minute, 20 metres.

Hoisting movement, length of cable on drum per minute—Quick speed, 40 metres; slow speed, 20 metres.

Lifting capacity of derrick, 5 tonnes.

The speed at which loads can be raised depends upon the weight to be dealt with and the gearing employed, the average speeds being as follows :—

Load.	Gearing.	Height Hoisted.
Kilogrammes.		Metres.
2,500-5,000	Slow speed	5 per minute
Less than 2,500	Quick speed	10 per minute
1,250-2,500.....	Slow speed	10 per minute
Less than 1,250	Quick speed	20 per minute

The derricks installed at the Rue des Italiens were arranged so that they commanded not only the whole of the building site, but also considerable areas over the new street and a portion of the foot pavement in the boulevard.

Moreover, as the rotating arm of No. 1 derrick was 3 metres higher than the corresponding arm of No. 2 derrick, the two appliances were available for use at the same time without mutual interference, and as the zone of action of the derricks overlapped to the extent denoted in Fig. 4 part of the building site was commanded doubly.

The latter facility proved of great convenience during the early stages of construction before the Rue des Italiens was open to vehicular traffic. At the period in question the only means of access to the site for goods was by way of the unloading platform (Fig. 4) on the Boulevard des Italiens.

Materials there delivered by lorries were hoisted by derrick No. 1 and transferred to required positions on the front part of the site, or to a point in the overlapping zones, where the materials were taken up by derrick No. 2 and thereby delivered to required positions on the back portion of the site.

Thus the conjugate action of the derricks enabled the contractors to handle materials mechanically over the entire area.

After the roadway of the new street had been completed and opened to traffic, the two derricks were employed independently for the reception and handling of materials.

Figs. 1 and 2 show the derricks in operation and also include a view of another type of crane supplied by Messrs. Perbal & Cie.

The latter, entitled the "Mât Grue," or mast crane, comprises four elements—a track for travelling motion, the mast, the crane proper, and the operating mechanism.

The track consists of two rails, one at ground level and the other 10 metres higher. The first is an ordinary railway rail, and the second a rail of special broad flange I-section, supported at intervals by channel bars with cast steel connexions. The track is usually constructed along the entire length of the building site.

The mast is a lightly built steel tower, usually

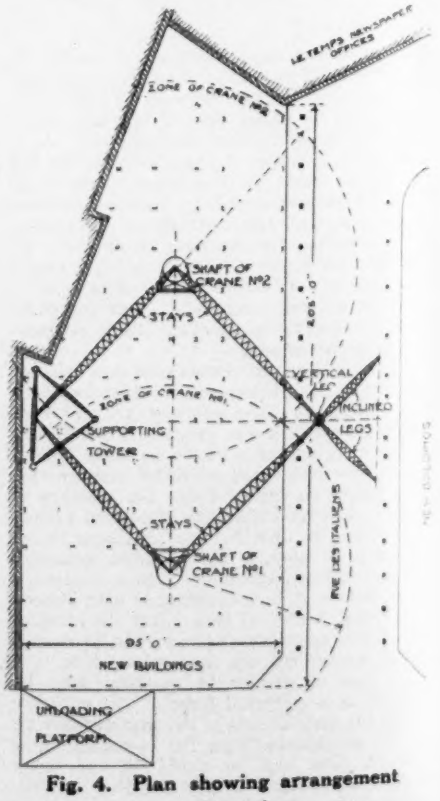


Fig. 4. Plan showing arrangement of Derricks.

built up to 40 metres high, composed of four corner uprights connected by bracing, and as the lower part of the mast is of reduced cross section, the appliance reduces obstruction in the street to a minimum. The head of the mast is provided with a cantilever platform for attachment of the crane, the platform projecting towards the building line in order to increase the radius of action of the crane.

The upper portion of the mast is square in cross section, and is fitted with a fixed cabin for the motor and gearing, and a travelling cabin for the mechanic in charge, this cabin being arranged to move up the mast like the cage of a lift.

The crane jib projects 3·25 metres beyond the centre, or 4·55 metres beyond the axis of the mast, and can be rotated through a complete circle 6·5 metres in diameter. It is capable of dealing with loads up to 3 tonnes.

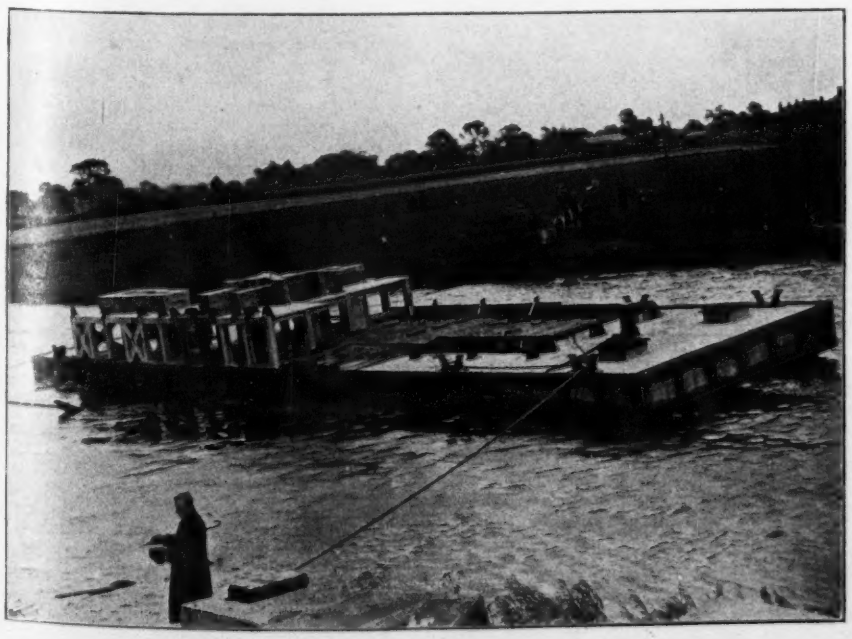
The operating mechanism includes a windlass and gearing for travelling and rotatory movements, preferably worked by an electric motor. The operating cabin is provided with means of controlling all the movements of the crane.

Although not taking the place of large derricks, the mast crane is of special value in constructing the façades of buildings. It occupies very little space outside the building line, and has the manifest advantage of obviating the employment of cumbrous staging as requisite for ordinary travelling cranes.

REINFORCED CONCRETE PONTOON: MANCHESTER SHIP CANAL.

An interesting example of reinforced concrete construction is furnished by the pontoon recently launched at Irlam for employment in connexion with the dredging operations conducted on the Manchester Ship Canal. The illustration given on this page is from a photograph taken on the occasion of the launch. The pontoon was designed by the late Mr. Hubert Congreve, M.Inst.C.E., for whom details of the reinforced concrete work were prepared on the Hennebique system by Messrs. L. G. Mouchel & Partners. The vessel measures 100 ft. long by 28 ft. wide by 8 ft. deep from the keel to the main deck, and is constructed with longitudinal and transverse bulkheads dividing the interior into a number of perfectly watertight compartments. The framework consists of reinforced concrete columns and beams, the outer skin and the interior partitions being only 3 in. thick, except beneath the coal bunkers and boiler-house, where the thickness is increased to 4 in. An upper deck over part of the vessel provides foundations for the engines and pumping machinery.

The pontoon has been built for the purpose of pumping sludge from barges filled from the dredgers, and of discharging the materials through long delivery pipes over low-lying areas in the neighbourhood of the canal, thus facilitating the economical disposal of sludge and at the same time raising the level and improving the soil of the areas selected. The vessel will be towed to the required points, and there moored for as many days or weeks as may be convenient, being moved from place to place as necessitated by the exigencies of dredging operations.



Reinforced Concrete Pontoon.

THE STRUCTURE OF GALVANISED IRON.

W. GUERTLER, in the *International Zeitschrift Metallographie*, states that he has been investigating the structure of galvanised iron, and finds that sections cut obliquely through the outer layers of galvanised iron show that the zinc and iron are separated by an intermediate layer of crystals of the compound Fe Zn_3. This compound is more electronegative than either iron or zinc, and thus accelerates corrosion if exposed. The zinc layer contains isolated crystals of the compound Fe Zn, which is also electronegative.

Zinc deposited from vapour by the dry process, or from solution by the electrolytic process, is porous, and also contains minute crystals.

Von Vegesack in 1907 (see the *Journal* of the Society of Chemical Industry, Vol. 28, p. 153) prepared an equilibrium diagram of zinc-iron alloys showing that iron dissolves in molten zinc to at least 24 per cent. Following up this fact Messrs. W. Arthur and Mr. H. Walker, in the *Journal of Industrial Engineering and Chemistry*, 1912, designate the crystals of unknown composition which first separate from the melt as "binding alloy." A number of samples of galvanised iron prepared by the hot galvanising, "Sherardising," and electrolytic processes have been examined micrographically in cross-section, a 0·5 per cent. solution of nitric acid in 95 per cent. alcohol being used for etching, with the following results :—

Hot Galvanised Iron.—In a section of ordinary galvanised iron four layers can be distinguished, viz., the iron, a very thin layer of the "binding alloy," a layer of the compound Fe Zn_3, and a layer of zinc, which is permeated by minute crystals of the compound Fe Zn_7. If the immersion in the galvanising bath be prolonged, much larger crystals of Fe Zn_7 are produced.

If an ordinary galvanised plate be treated cautiously with caustic soda, the zinc can be dissolved away so as to leave the minute needles of Fe Zn_7 visible against the darker polygons of zinc. The parting of the coating when a piece of galvanised iron is sharply bent takes place at the surface of the "binding alloy," but in the blistering and subsequent "flaking off" observed when galvanised iron is heated, the parting takes place between the zinc and the compound Fe Zn_3.

Sherardised Iron.—According to the temperature, time, and composition of the zinc-powder mass employed, the coating may vary from a very thin layer of the alloy Fe Zn_3, with a more or less distinct layer of the "binding alloy" to a thick coating of zinc iron alloys with a surface layer of zinc. In all Sherardised coatings numerous cracks running through the alloy can be observed.

Electrogalvanised Iron.—According to the conditions, coatings of very pure zinc or of zinc-iron alloys of widely varying composition can be obtained, but in all cases there is a very thin layer of "binding alloy."

Émile Vigouroux, F. Ducelliez, and A. Bourbon have investigated the iron-zinc alloys by means of electromotive force, and their results are set forth in the *Bulletin Societe Chimie* of 1912. A series of such were prepared by melting the two metals together in a current of hydrogen. The E.M.F.'s developed when the various alloys so prepared were opposed to poles of zinc in a twentieth-normal solution of zinc sulphate were measured.

Limits of Iron Percentages in Alloys.		E.M.F. in Volts.	Definite Compounds Deduced from E.M.F.	
Lower.	Higher.		Formula.	Per Cent. of Iron.
10·9	21·0	0·115	Fe Zn_7	10·8
22·9	71·0	0·144	Fe Zn_3	22·19
72·1	80·0	0·35	Fe_3 Zn	71·9
82·5	87·8	0·39	Fe_5 Zn	81·1

The conclusion drawn from the results given in the table is that four definite compounds of iron and zinc exist, having the simple relations shown, and that the first two of these have been found previously by Von Vegesack (see above).

ANCIENT IRON BEAMS IN INDIA.

THE best-known examples of large forgings in India are the iron column at Delhi, 23 ft. 8 in. high by 16½ in. to 12 in. in diameter; and the larger column at Dhar, now broken into three pieces and originally measuring 43 ft. long by about 10 in. to 11 in. square, the latter dimensions being only roughly approximate owing to the irregular form of the column.

At the Black Pagoda of Orissa, Kanarak, there are some very large forged iron beams, which although less generally known than the pillars mentioned are more interesting architecturally.

The two largest members, as described by Mr. H. G. Graves, of Calcutta, are 35 ft. long by 8 in. square, and 25 ft. 6 in. long by 11 in. square. The latter beam has one end broken off, so that its original length is uncertain, but the piece remaining weighs about 9,000 lb., its end indicating that the method of construction was by the welding up of billets.

The age of the temple has been discussed from time to time, the period of its construction being placed by some as early as the IXth century, and by others as late as the XIIIth century. It is probable that the earlier parts were commenced at the first-mentioned time, and that the building was completed three or four centuries later.

Bishan Swarup, in a work published by the Bengal Government in 1910, expresses the opinion that the ruin of the pagoda was caused mainly by the removal or the collapse of the heavy top of the corbelled-in roofs, which, in consequence, sank inwards and fell down.

The iron beams, of which many still exist and lie scattered around the building, were originally used as supports under the door lintels and in the roof corbelling. Similar beams on a smaller scale are to be seen in the Garden Temple at Puri, where the images of Juggernaut, Balabhadra, and Subhadra are taken on cars in June or July every year.

As the Kanarak Temple has been closed up and filled in with masonry and sand to prevent further falls, it is not possible to ascertain the original position of the beams or whether any are still in place.

Most of the beams exposed have been broken by the fall, some being seriously rusted and others very little affected, or having a thin and closely-adhering skin of oxidised metal.

Examination indicates that the beams were made by welding together small blooms of 3 lb. to 4 lb. in weight, and measuring 1 in. square, 2 in. square, or 2 in. by 1 in. In some places the blooms appear to have been welded together in strings to form short bars, which in turn were welded into place. No special care seems to have been taken to make the blooms

break joint either longitudinally or transversely, but the longitudinal welds are approximately of the lapped type.

The beams are nearly all of uniform size and square in section from end to end. The designers do not appear to have appreciated the advantage of making the depth greater than the width of the beams, which are so imperfectly welded that they could never have been of much structural value, although constituting remarkable examples of smith's work.

ENGINEERING NOTES.

A Large Elevated Reservoir. THE extensive sanitary improvement undertaking now in course of realisation by the city authorities of Buenos Ayres involves the expenditure of some 3,500,000*l*., one remarkable feature of the project being an elevated reservoir to be constructed at Caballito. This reservoir will consist of three tiers of steel tanks with the aggregate capacity of about 16,000,000 gallons, which is far greater than that of any metal reservoir hitherto constructed in any part of the world.

The tanks will be supported on cast-iron columns with concrete foundations. Water will be pumped into the reservoir from the River Plate.

The Sara Ghat Bridge, India. ONE of the most important engineering works projected in India is the new bridge designed to carry the Eastern Bengal State Railway over the River Ganges at Sara Ghat, nearly 120 miles from Calcutta.

The bridge will comprise fifteen lattice girder spans, each 359 ft. long by 52 ft. deep at the middle, and its width will be 32 ft. from centre to centre of the main girders, or 42 ft. 6 in. over all.

One end of each girder will be carried on fixed steel bearings, and the other end on similar bearings, with provision for expansion and contraction.

The bearings will be at the top of piers extending down to 60 ft. below low-water level and founded on steel caissons, measuring 63 ft. by 36 ft. sunk below the bed of the river. The caissons will be floated out to predetermined positions and sunk, additional sections being added and filled with concrete until the cutting edge of the caisson has reached the river bed. The foundations so formed are to be finished by a cap of concrete from which the masonry piers will be built up.

Considerable competition occurred among engineering firms anxious to obtain the contract for the steel girders, and the leading American bridge companies were especially active in this direction. Therefore it is particularly satisfactory to note that the work was allotted to two British firms of structural engineers.

The whole of the substructure and the erection of the steel girder spans will be undertaken by the Indian Government staff under the direction of Mr. R. R. Gales, in accordance with the designs of Sir Alexander Rendel, Consulting Engineer to the India Office.

By the completion of the new bridge the present necessity for ferrying across the Ganges will be obviated and direct railway connexion will be established between Calcutta and the Himalayas.

Canadian City Bench Marks. DURING the early part of last year it was decided by the city authorities of Edmonton, Alberta, to establish a complete system of bench marks for survey purposes. The bench marks, installed under the direction of Mr. C. C. Sutherland, of the Roadways Department, were made by boring an 8-in. hole 7 ft. 6 in. below ground level, and filling it up with concrete mixed in the proportions of 1 : 2 : 5. The upper 18 in. of concrete is enclosed in a piece of 6-in. diameter cast-iron water-pipe, acting as a sheath, and allowing the top of the bench mark to project 6 in. above the surface. In the upper end a 1-in. square brass bolt is embedded to the depth of 8 in., passing through a number-plate of the same metal, the mark being protected by a wood cover. From the main system, secondary bench marks have been established to cover the entire area within the city boundaries. The secondary marks are of three kinds for undeveloped, residential, and business districts, respectively. In undeveloped areas the mark simply consists of a railway spike driven into a telegraph or electric-light pole. In residential districts, the bench marks are similar to those in the main system, and placed where they can be seen from different directions. In the business area the marks are similar to those in the main system, but provided with a cast-iron cap flush with the foot pavement level, and they are placed at corners, 3 ft. back from the curb, so that they may be seen from several directions, and be out of the way of telephone and electric-light conduits. The complete system gives a series of elevations throughout the city that are as correct as it is possible to make them with an ordinary engineer's level, and as shown by the closing error the elevations are nearly perfect.

Boulogne Harbour. THE new Bassin Loubet, begun nine years ago, has recently been opened for maritime service. It provides quayage of a total length of 1,000 metres, the west side being 200 metres, and the north and south sides 320 metres in length, with a mean water-depth of 13 ft. below low-water mark. The dock occupies a site, in part reclaimed from the sea, in the sand dunes of Capecure and Chatillon, on the south-west of the present harbour, and the outlay, including the new Douane, wharves, warehouses, etc., amounts to more than 503,000*l*. Further improvements will shortly be undertaken, and will comprise a rebuilding of the Quai Gambetta, the Gare Maritime, and the Quai Chanzy (with extension and widening), and a new north-east pier, of stone, to cost 280,000*l*., which will replace the existing wooden jetty of 1829, and afford an entrance into the harbour, widened from 70 yds. to 140 yds. The breakwater is being extended by 600 metres to a total of 2,720 metres, at a cost of 400,000*l*., and tenders are invited for completing the deep sea outer port at an estimated outlay of about 1,200,000*l*.

Allahabad Bridge. MESSRS. RENDEL & ROBERTSON, of Westminster, made the designs for the widening of the East India Railway Company's bridge across the Jumnah, at Allahabad, for which all the steelwork is being supplied by Messrs. Head, Wrightson, & Co., Ltd., of Thornaby-on-Tees. The widening provides for a double railway line, and comprises fourteen double-deck and two approach spans, the latter being 45 ft. 7 in. long apiece. The upper deck is composed of cross-girders, rail-bearers, and plated decking; the lower is of pressed trough flooring laid on cross-girders, and carries a roadway 13 ft. 3 in. in width between the kerbs. The plated decking is secured to cantilever brackets of the approach spans, which take a single line to the top deck of the main spans.

St. Ann's Well, Buxton. UNDER the direction of Mr. F. Langley, the Borough Surveyor and Water Engineer to the Buxton Urban District Council, some alterations have recently been made to the pump-room at the famous St. Anne's Well, which is an important feature of the town of Buxton.

The exterior colonnade has now been taken into the pump-room by filling in the spaces between the columns with ashlar and windows, and the original outer wall has been removed, the opening being spanned by steel girders supported by two newly-built brick piers.

The enlarged pump-room now measures 50 ft. by 35 ft. 9 in., and has two entrances, one at each end of the building, each with a vestibule 8 ft. square under one of the domes.

The back portion has been raised to the height of the main building, and the space formerly walled off for the accommodation of pumping machinery has been added to the pump-room.

Two brick piers carry steel girders for supporting the roof in place of the wall which has been taken down, the piers being in line with those built at the front.

In the space added at the back of the pump-room is the new well chamber, 29 ft. long by 14 ft. wide, with a serving landing and marble balustrade along the front.

The well in the middle of the new chamber is elliptical in plan, the major and minor axes measuring 6 ft. and 3 ft. 9 in. respectively. The well is 1 ft. 9 in. deep, the waters rising through perforations in the bottom of the basin. The outer shell is of cement mortar lined with blue bricks and finished in white statuary marble, the upper edge having a moulded channelled coping.

At the left hand of the well chamber is the chalybeate spring room, and at the right hand a room for the use of attendants.

These rooms are separated from the pump-room by a mahogany partition and from the well chamber by a low marble balustrade.

The interior of the remodelled pump-room has been decorated in appropriate and pleasing style, and Mr. Langley is to be congratulated on the successful manner in which the alterations have been carried out.

Portland Cement and Slag. HERR C. SCHNEIDER, in the *Mitt. kgl. Materialprüfungsamt*, 1912, gives a comparison of the effects of pumice sand and standard sand on mixtures of Portland cement and slag. The materials used for the tests were (1) Rüdersdorf Portland cement, (2) blast-furnace slag which had been heated to a red-heat, (3) ground pumice, (4) Freienwald sand. Nos. 2, 3, and 4 were all passed through a screen of sixty meshes per centimetre.

The tests were made from two different standpoints, namely, as to the ratio of slag to portland cement, called the mixture, and as to the effect upon several such mixtures respectively of the Freienwald sand designated in the Table II. as "Standard"; and of the ground pumice designated pumice sand.

The mixtures were compounded in percentage by weight of Portland cement and blast furnace slag as Table I.:

TABLE I.

Distinguishing Letter.	Portland Cement.	Slag.
a	100	0
b	80	20
c	70	30
d	60	40
e	20	80

Using one volume of "mixture" to three volumes of standard sand or pumice sand, five tests were made of each compounding, the average results of which are given in Table II. It will there be seen that the pumice sand took up much more water than the standard; and that the crushing strength of the blocks was best for the former in mixtures *d* and *e*; whilst in mixtures *a*, *b*, *c*, and especially in *a*, the standard sand was best.

TABLE II.—FIRST SECTION SHOWS TESTS USING STANDARD SAND, SECOND SECTION USING PUMICE SAND.

Mixture.	Water Added, Per cent.	Average Volume—Weight in Grams per Cubic Centimetre, after			Average Crushing Strength in Kilogrammes per Square Centimetre, after	
		1 Day.	28 Days.	90 Days.	28 Days.	90 Days.
a	7·5	2,248	2,279	2,287	426	470
b	8·0	2,087	2,158	2,283	203	248
c	9·0	2,059	2,132	2,141	153	190
d	10·0	2,020	2,036	2,104	100	126
e	11·0	1,820	1,997	2,014	18	26
a	28·0	1,651	1,710	1,727	261	303
b	29·0	1,561	1,654	1,673	174	219
c	30·5	1,527	1,6 1	1,648	144	179
d	32·0	1,496	1,501	1,614	102	139
e	34·0	1,307	1,497	1,549	27	31

THE BUILDING TRADE.

LONDON BUILDING UNDER MODERN LAWS.

THE present system, or rather no system, under which the London Building Act of 1894 is administered has frequently had the effect of rendering occupiers of buildings liable to prosecution for acts of illegality committed in ignorance. Often has a building, on change of ownership, been put to uses not contemplated at the time of its erection, uses which contravene the Building Act in ways that are far from being obvious to the lay mind. In such cases, when the facts become known to the authorities, proceedings may be taken against persons who are morally innocent.

In order to see how such cases may arise and what precautions would prevent their arising, let us briefly trace the usual process of Building Act administration in London from the commencement to the completion of a building. The builder serves upon the district surveyor a notice of his intention to build. If the notice, taken by itself, discloses an intention to do anything contrary to regulations, the district surveyor has to serve upon the builder a notice of objection referring to such matter. Usually, however, such a case does not arise, and in any case there are numerous matters in every building which are not specified in a builder's notice, and which cannot, indeed, be understood without reference to plans. Plans, except in the case of a public building, are not required to be deposited with a district surveyor, and he, as a rule, peruses the plans unofficially, pointing out in advance anything to which objection would have to be taken. He then surveys the work during its progress, and sees that it is carried out in accordance with the Act or Acts and by-laws which are applicable. Upon the completion of the work he withdraws, leaving behind no record of his labours other than the building itself. Subsequently the building may change hands. The new owner usually sees no reason for seeking an architect's advice as to the manner in which his building should be occupied, but he lets it in the most profitable way open to him, and possibly it is sublet, with the result that it is used for purposes not contemplated by the original architect, and frequently in contravention of building laws.

For example, a building intended to be used wholly or principally as offices or counting-houses may be sufficiently lighted and ventilated, without having an open space at the rear of the form and extent required by sect. 41 of the Act. Upon change of ownership the entire upper portion of such a building might conceivably be occupied as residential chambers, without hardship or injury to any of its occupants, yet the owner would become liable to heavy penalties. Then there are the rules applicable to habitable rooms. Concerning these it might be argued that surely any person should be competent to judge whether a room is or is not fit for habitation. But, referring to sect. 45, can a layman be expected to know when a window looking into an internal court must have, and when it need not have, a sight-angle of 2 to 1 from its sill to the top of the opposite wall? Again, referring to sect. 70, few will understand why in one case a room must have a window equal in size to one-tenth of its floor area, while in another case a dormer of which the whole can be opened, equal in size to only one-twenty-fourth, is sufficient. A building originally intended to be used wholly for purposes of trade, or partly for trade and partly as offices, may, after changing hands, be used partly for trade and partly as a dwelling-house, without having the fire-resisting separations required by sect. 74 (2). In any of the above cases the rules as to the conversion of buildings under sect. 211 would be infringed, and the offending parties would become liable to a penalty of ten pounds "and to a daily penalty not exceeding the like amount."

Under the Metropolitan Building Act, 1855, the prevailing method of procedure worked well, because that Act was free from complex rules affecting the uses of buildings. But the Act of 1894 introduced such rules without providing for the change of procedure which now appears needed. We need something akin to the provincial system, under which buildings are carried out in accordance with plans approved by a public authority, and the plans remain as a record of what has been officially sanctioned. As regards London, the tendency of legislation seems to be in the direction of an approximation to such a system. In the Act of 1894 many things are prohibited, except with the consent of the County Council; and under such consent works have to be carried out in accordance with approved plans. Under the London Building Acts (Amendment) Act, 1905, means of escape in case of fire are required in certain cases to be provided, according to plans and conditions approved by the Council. Possibly, in future amendments of the London Building Acts, the principle will be further extended. In the meantime architects and builders may do much to preserve owners of property from the pitfalls that beset their path.

If the builder's notice to the district surveyor were always accompanied with plans showing clearly the nature of the intended work and the uses of the building in its several parts, such plans being referred to in the notice, many sources of subsequent error would be removed. The district surveyor would be obliged to take official cognisance of the plans and to serve upon the builder a notice of objection in respect of any matter seen to be contrary to the regulations; and in the absence of any such notice the plans could be deemed to be officially approved. But, even without serving plans upon the district surveyor, it is always possible for the architect, on completion of the building, to furnish his client with a set of plans indicating the uses to which it can lawfully be applied. On disposal of the building these plans could be handed over to the new owner, who would thus be apprised of the limits of user and would be guarded against the error of converting the uses of his building without the necessary structural alterations.

IMITATION STONE FLOORS.

"STEINHOLZ" or "stone wood" forms a connecting-link between the elastic vegetable fibre materials, artificial or natural, the stone deriving its qualities more from the magnesite or from the vegetable fillers of which it is made, according to the relative proportions of the two components. It is not advisable, says a German writer, to swerve too far from the proportions of 40 per cent. magnesite to 60 per cent. fibrous vegetable filler in the dry mixture. A floor which is practical from every point of view is made from 50 litres of wood flour, 16·5 kg. heavy spar (barite), 8·35 kg. of asbestos, and 15 kg. of mineral colouring matter, together forming 60 per cent. of the compound. For mixing there is used a 22 per cent. solution of magnesium chloride in water, to which is added a solution of 480 grammes of neutral tallow soap and 240 grammes of silver soap in 20 litres of hot water. Before use there is added to this soap solution 1¼ litres of alcohol, and then 7 to 8 litres of the magnesium chloride solution. By adding 4 kg. of acetic acid to the last-named solution there is obtained the requisite liquid mixture to be added to the dry compound.

By omitting the vegetable fillers there are obtained a species of cement, the most usual of which is that made with gypsum (plaster of Paris). There are no longer differences of opinion as to the best manner of preparing this mixture. The general opinion is that only the slow-setting plaster is practicable, as stucco plaster, when rendered slow-setting by special additions, never makes a good floor.

In preparing the gypsum mix, the same rule applies as in general in handling "plaster of Paris," namely not to pour the water on the latter, but to shake the powdered plaster lightly into the water, and then stir, the result being the avoidance of lumps.

The somewhat thin mixture is applied by pouring and trowelling smooth. After hardening has begun, but before the setting is completed, the floor is beaten hard with wooden blocks, which permit reduction of the thickness of the layer by one-fourth.

Very often this floor is used only as a basis for linoleum; in which case the use of fillers such as ground coke is permissible; indeed, coke can be used even where no linoleum is to cover the floor proper. Where the plaster is not concealed by linoleum or other covering it is well to use colouring matter with it, or by means of wooden forms to make therein sunken patterns which can be filled with mass of another colour than the ground.

Besides gypsum there may be used lime and clay. Both were used in older times, and indeed clay has been employed quite recently in the country for barn floors and the like, and has the advantage over cement that it yields a very much more elastic floor.

If cement is used instead of gypsum, broken marble may be embedded therein in regular patterns, the result being called terazzo. When the cement has hardened the surface is rubbed down smooth. For the lower layers there may be employed a beton consisting of one part of cement, three to four of sand, and eight of gravel. Or this layer may be made of one part of slacked lime, one to two of powdered brick, and three to four of broken brick. This floor is especially adapted for engine-rooms and the like, having the advantage over slab floors that sunken places for the machines may be left and bolt-holes easily provided for.

Such floors are also especially adapted for barn floors over which heavy wagons are driven. Here the lower layer may be of a well-tamped mixture of one part of cement, three of sand, six of gravel, and nine of broken stone. The upper layer, say 1½ in. thick, may be of two parts of cement and five of fine granite spalls. An especially firm and even surface may be obtained by rolling in a thin layer of fine cracked granite. Of course, no rubbing down is here necessary.

To obtain a more elastic floor the under layer may be of one to ten beton, with a ¾ in. to 1 in. thick top layer of "cork plaster," this being composed of sawdust, cork refuse, magnesite, and magnesium chloride, spread on thin.

The reverse of this procedure is attained in Dresden by spreading a layer of nine parts of cork refuse, two of cement, and two of a felt-like mass stirred in water, and bedding the pieces of marble therein. This floor is said to be a good insulator of heat and sound and also very resistant to wear.

ARTIFICIAL MARBLE FROM LIMESTONE.

A NEW process of making artificial marble is being practically employed by a Hessian firm. Whereas formerly the so-called artificial marbles imitated the natural only in appearance (as, for instance, in colour), veining, and polish, the present method makes use of a substance chemically and physically as near as possible to marble, namely, hard limestone, being an uncrystallised lime carbonate, whereas marble is the same material, only in crystallised form. The old-fashioned artificial marbles were usually made of powdered stone, sand, and a bond—usually lime or cement, or a mixture of these.

According to the new process, calcined limestone, such as is used for making lime mortar, is artificially retransformed into lime carbonate, and then artificially coloured to produce the desired patterned or veined effect. The calcined lime is subjected to the action of carbonic acid gas at about 110 deg. C., at which temperature a chemical combination takes place. No pressure is employed. The necessary carbonic acid gas is obtained from lime-kilns, breweries, or other cheap and plentiful sources. The only special precaution

necessary is to avoid the presence of watery vapour in the gas. The temperature should vary with the porosity of the material and the proportion of lime hydrate which it contains. The less porous the mass and the coarser the particles the higher the temperature necessary, but 110 deg. C. is seldom exceeded, as above this the action of the gas is diminished by the drying effect. The resultant mass is sawed into slabs and polished, just like natural stone; but the price (in Hesse) is only about one-half that of the latter, and, of course, even although a natural marble is at hand and available for use, the process has the advantage of delivering any desired colour or veining.

COST PRICES OF STUCCO WITH THE CEMENT GUN.

In previous issues we have described and referred to the uses of the so-called cement "gun," an appliance which is finding considerable employment both in America and on the Continent.

Therefore our readers will probably be interested in the subjoined data on the actual cost of work executed on the exterior of a two-story building constructed for the United States War Department.

The figures are given on the authority of Mr. R. C. Hardman, Superintendent of Construction in the Department, but for convenient reference we have converted the various prices to English currency.

The exterior of the building comprised 631 sq. yds. of surface, and fifty-six door and window openings, the cost items being as follows:—

	Cost. £	s.	d.	Cost per sq. yd. s.	d.
LATHING (Materials)—					
Cheese cloth, 631 sq. yds. ...	4	8	0		
Building paper, 56·8 sq. yds.	3	8	2		
Wire, 631 sq. yds.	16	2	7		
Lath, 500 sq. yds.	0	10	7		
Nails, 10 lb.	0	1	8		
Staples, 200 lb.	1	14	0		
	26	5	0	 0	10
LATHING (Labour)—					
Carpenters, 75 hours	7	14	0		
Carpenters' labourers, 144 hours	10	16	0		
Labourers, 33 hours	1	9	0		
Labourers (Mexican), 41½ hrs.	1	6	0		
	21	5	0	 0	8
Total for lathing.....	47	10	0	 1	6
PLASTERING (Materials)—					
Portland cement, 65 barrels	44	11	10		
Sand (on site)					
	44	11	10	 1	5
PLASTERING (Labour)—					
Nozzleman, 96 hours.....	10	16	0		
Engineer, 100 hours	7	10	0		
Labourers (mixing), 212 hrs.	6	12	6		
Labourers (on wall), 156 hrs.	5	4	0		
Labourer (hose), 59 hours ...	2	11	9		
	32	14	3	 1	0½
FUEL—					
Gasoline, 97·5 gallons	4	5	10		
Lubricants	0	19	7		
	5	5	5	 0	2
Total for plastering	82	11	6	 2	7½
Total cost	130	1	6	 4	1½

The time occupied in executing the work was twelve days. Although the total cost per square yard may appear to be somewhat high, it must be borne in mind that the stucco was at least 1½ in. thick, and that the building was not a particularly favourable one for the employment of the apparatus.

THE INSURANCE ACT.

THE decisions given by the umpire under the Insurance Act, and reported in the *Labour Gazette*, now number over 1,000, and only such decisions are reported as lay down some principle or affect a class. This method of deciding the effect of legislation is without precedent, and it is to be hoped will not in itself create a precedent. To classify these 1,000 odd decisions is an impossible task, except for the expert, and laymen cannot be expected to know what workmen they are under liability to insure, yet a penalty may be imposed if the provisions of the Act are not complied with. Unemployed insurance was admittedly only introduced as an experiment, and it was understood that it would be confined to a limited number of specified trades. A perusal of the decisions will show that this view of Part II. of the Act was erroneous, and that in practice there is far greater difficulty in determining who are insured persons under this part of the Act than under Part I.

At the risk of repeating ourselves, we must again point out that all this uncertainty and difficulty has been occasioned by subsect. 2 of sect. 107, which provides that in determining whether a trade is or is not an insured trade regard shall be had to the nature of the work in which the workman is engaged rather than to the business of the employer by whom he is employed. This provision was wholly incompatible with the idea of a limited experiment, and accounts for the numberless questions which are being submitted to the umpire for decision, and it should be repealed at the earliest possible opportunity. If the sixth schedule of the Act which specifies the trades to which Part II. of the Act was to apply be compared with the decisions now given by the umpire, it becomes apparent how very different in practice is the application of unemployed insurance from what it was announced to be when it was introduced, and how impossible it is for any employer to know whether his workmen are within this part of the Act or not. Where penalties are imposed the Legislature has always hitherto been careful to see that Acts of Parliament are specific and expressed in clear terms, so that the public should know whether they are complying with the law or are committing an offence by contravening it, but Part II. of the Insurance Act has already to be read in connexion with 1,000 decisions, and each day is adding to their number. We believe that no prosecution has been instituted at present under this part of the Act, and it remains to be seen how far these decisions of the umpire are binding or form part of the Act.

TRADE UNIONS AS EMPLOYERS.

THE Press is making merry over the dispute between the Amalgamated Society of Railway Servants and its clerical staff, and a trade union experiencing "peaceful persuasion" and picketing it must be confessed has its humorous side. All the same if the allegations are true that the men on strike have had their benefits confiscated and that new men are being compelled, when engaged, in contravention of the Insurance Act to join the union as an approved society, this is a serious matter. At the Trade Union Congress indignation was expressed because it was alleged that employers were exerting pressure to compel their employees to join certain societies, and it is to be hoped that this union is wrongly credited with having adopted any such course in regard to its own servants. The oratorical thunder that is rolled forth against employers in their relations towards their employees will, however, be discounted by the men in future if they find that the Trade Unions as employers consider it their duty to confiscate benefits and to compel men to join the unions as approved societies. With the militant attitude adopted by the unions and with the extraordinary powers conferred upon them we have never felt that they should have been created approved societies under the Insurance Act.

PRACTICAL TRAINING OF GASFITTERS.

THE Gas Light and Coke Company have just put into operation their scheme for the practical training of gasfitters. They give the necessary instruction in workshops upon their premises, and the London County Council will provide courses at the Westminster Technical Institute to extend over two years, in mechanical drawing, workshop arithmetic, composition, and précis. The boys, after passing six months in the shops, will go out with fully-trained fitters, whilst continuing to attend the Institute classes thrice a week. During the course the boys will receive 2s. 6d. wages in the first year and a maximum of 10s. in the second year; they will, it is anticipated, then earn from 3s. to 4s. as gasfitters' mates, and possibly from 4s. 6d. to 6s. a day. The boys must be fourteen and not more than sixteen years old when they take up the course, and possess some mechanical aptitude, together with an elementary school Standard VII. proficiency.

GENERAL BUILDING NEWS.

NEW CLOCK, MAULDEN CHURCH.

A large clock has just been erected in Maulden Church tower, Bedfordshire, which shows time on one large dial, plays the Westminster quarter chimes, and strikes the hours. The work has been carried out by Messrs. John Smith & Sons, Midland Clock Works, Derby, who recently erected a similar clock at Silsoe Church in the same neighbourhood.

BRIGHTON AND HOVE HIGH SCHOOL FOR GIRLS.

The alterations and improvements which have been carried out at this school are now complete, and the increased accommodation provides for 300 girls. The architects for the work were Messrs. Osborne Smith & Waterhouse, of London, and the work was executed by Messrs. Field & Cox, of Brighton.

COUNTY SCHOOL AT HYDE.

New school buildings in Clarendon-road, Hyde, built for the Cheshire County Council, were opened on the 17th inst. The site of the building is on the side of a hill facing the town, and is somewhat irregular. The planning of the school has been arranged so as to utilise the site to the best possible advantage. The school is set well back from the roadway and is approached by a circular carriage drive. The style of architecture adopted is a free treatment of "Georgian," the materials used being red stock brick facings with biscuit-coloured terra-cotta dressings of varying shades, and roofed with a sea-green Westmorland slate. The building is heated throughout with low-pressure hot water, supplemented by open fireplaces where necessary; adequate ventilation also has been provided. The general contractors were Messrs. Samuel Robinson & Sons, of Hyde, who, with their sub-contractors, have satisfactorily carried out the work from the designs and under the supervision of the architect, Mr. G. H. Willoughby, F.R.I.B.A., of Manchester. Mr. E. Pentelow acted as clerk of works.

MOROCCO, CASABLANCA.

H.M. Consul at Casablanca (Mr. A. M. Madden, C.M.G.) reports that this year a large and profitable import and export trade is being done. The great extension of building operations in and around the town of Casablanca has been a marked feature of the year, and in consequence there has been a large import trade in all kinds of building materials.

COMMERCIAL FAILURES.

According to *Kemp's Mercantile Gazette*, the total number of commercial failures recorded in England and Wales during the week ending Friday, September 20, was 112. To this number the building and timber trades contributed thirteen, a high proportion.

TRADE NEWS.

Under the direction of Mr. Charles Jones, M.Inst.C.E., Borough Engineer, Ealing, Boyle's latest patent "air-pump" ventilators and air-inlets have been applied to the Council Chamber, Town Hall, Ealing.

The Improved Wood Pavement Company, Ltd., 46, Queen Victoria-street, E.C., find that this has been a record year for creosoted wood-paving. On their list of contracts are the names of many of the principal authorities in London and the provinces.

Messrs. Patman & Fotheringham, Ltd., of 100 and 102, Theobalds-road, W.C., and Park-street, Islington, N., have received the large painting and redecorating contract at the Sessions House, Clerkenwell.

The Eastleigh and Bishopstoke Isolation Hospital is being supplied with Shorland's patent exhaust roof ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

PORTLAND STONE AND ITS WEATHERING.

Dr. J. S. Owens read a paper to the British Association upon "Experiments on the Weathering of Portland Stone." Dr. Owens referred to the investigations begun by Dr. Des Voeux, and now being conducted by the Coal Smoke Abatement Society, with the object of finding the connexion between smoke and the adverse sulphating of exposed stones that contain a large element of calcium or magnesium carbonate. The stones are in course of being treated during periods ranging from 105 to 687 days in various conditions, namely, when (*a*) broken without exposure; (*b*) broken after exposure to natural influences out of doors in London and the country; (*c*) broken after having been kept indoors in London and the country; and (*d*) broken after having been exposed, whilst embedded in soot, to air in the country and London.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN.—Alterations at city hospital; Mr. J. Rust, Architect, Burgh Hall, Aberdeen.

Ashby-de-la-Zouch. — Additions at Castle Lodge, South-street; Messrs. Orton & Sons, builders, Kilwardby-street, Ashby.

Avonbank.—Messrooms at electricity works (267*l.*); Messrs. J. Perkins & Son, builders, 62, Lower Redland-road, Bristol.

Belfast.—Additions to offices of Water Commissioners (1,097*l.*); Mr. S. Stevenson, architect, 83, Royal-avenue, Belfast; Messrs. J. & W. Stewart, builders, Ormeau-road, Belfast.

Bishop Auckland.—Baths; Mr. T. Collins, Surveyor, Urban District Council Offices, Bishop Auckland.

Blackburn.—Hall (20,000*l.*) for the Bolton Wesleyan Synod.

Blyth.—Proposed Town Hall (10,000*l.*); Mr. Robert Grieves, Surveyor, Urban District Council Offices, Blyth.

Bognor. — Sixty-four houses; Mr. O. A. Bridges, Surveyor, Urban District Council Offices, Bognor.

Bournemouth.—Additions to club, Goldenhurst-road; Secretary, East Conservative Club, Goldenhurst-road, Bournemouth. Additions to the Endowed High School for Girls, Norwich-avenue, for the Managers.

Bradford.—Proposed branch library, corner of Undercliffe-street and Tennyson-place, and open-air baths, Fairweather Green; Mr. Reginald G. Kirkby, Architect, Town Hall, Bradford.

Bridlington.—Club at People's Palace for the Secretary of the Bridlington and District Conservative Club.

Bury.—Nurses' home; Messrs. Thompson & Brierley, builders, Boundary-street, Bury.

Cardiff.—Mobilisation store (1,194*l.*); Mr. J. Stephens, builder, Cardiff.

Carlisle.—Post-office, Warwick-road; H.M. Office of Works, Storey's-gate, Westminster, S.W.

Carnarvonshire.—Wireless telegraph receiving and transmitting stations; Marconi's Wireless Telegraph Company, Ltd., Marconi House, Strand, W.C.

Cathcart.—School, Craig-road, for the Cathcart School Board.

Cirencester. — Enlargement of hospital (2,000*l.*); Mr. H. Fleetwood, builder, South Cerney, Cirencester.

Cottingham.—Tuberculosis hospital (15,000*l.*): Mr. J. H. Hart, Architect, Town Hall, Hull.

Crompton.—Extensions to Diamond Mill for Messrs Hardman, Ingham, & Dawson, rope and twine manufacturers.

Crewe.—Alterations to premises for Woolf's Brewery Company, Ltd.

Croydon.—Offices at Gas Works; Messrs. Berney & Son, architects, 104, George-street, Croydon; Mr. D. W. Barker, builder, Church-road, Croydon.

Dartford.—Alterations and additions to workhouse (550*l.*); Mr. T. Knight, builder, Craybrooke House, Sidcup-hill, Sidcup, Kent.

Darwen.—Extensions to warehouse for the Greenfield Mill Company, cotton goods manufacturers.

Dewsbury.—Additions at workhouse (508*l.*); Mr. J. Pease, Clerk, Guardians' Offices, Dewsbury.

Dumbarton.—Additions to slaughterhouse (1,300*l.*); Mr. J. Briggs, Surveyor, Burgh Hall, Dumbarton.

Dunfermline.—Workshops, Castleblair Park, for Mr. John Rintoul, general dealer, Jig Burn House, Dunfermline; rebuilding Castleblair Linen Factory for Messrs. John Inglis & Co., Victoria Works, Grantsbank-street, Dunfermline.

Falmouth.—Twenty-two houses; Mr. H. W. Tressider, Surveyor, Town Hall, Falmouth.

Gainsborough.—Extensions to baths, Lea-road (1,450*l.*); Mr. J. G. Cooling, builder, Ropery-road, Gainsborough.

Glasgow.—Warehouse buildings for Glasgow and South-Western Railway Company; Mr. H. E. Clifford, architect, 225, St. Vincent-street, Glasgow. Picture theatre, Sauchiehall-street (2,000*l.*); Mr. A. V. Gardner, architect, 164, Bath-street, Glasgow. Headquarters, Crange Lodge; Messrs. G. Arthur & Son, 95, Bath-street, Glasgow. Cold storage warehouse, Hill-street; Messrs. J. W. & J. Laird, architects, 163, Hope-street, Glasgow. Episcopal church and hall, Mile End; Mr. H. D. Watson, architect, 213, West Campbell-street, Glasgow. Hall, 298, New City-road, for Miss E. Taylor, 183, Saracen-street, Possilpark, Glasgow; alterations and additions to buildings at the Stobhill Hospital for the Glasgow Parish Council; alterations to premises for Messrs. W. P. Lowrie & Co., Ltd., bonded warehousemen, 44, Washington-street, Glasgow; additions at works, Parkhead, for Messrs. William Beardmore & Co., Ltd., steel manufacturers.

Greenock.—Two hundred houses; Mr. A. J. Turnbull, Master of Works, Burgh Hall, Greenock.

Halifax.—Barracks for the Halifax Battery of the 2nd West Riding Brigade; H.M. War Office, Whitehall, S.W.

Hampton.—Cottage hospital (3,850*l.*); Mr. F. G. Hughes, architect, Ashley-road, Hampton; Mr. E. D. Hobbs, builder, Angel-road, Thames Ditton.

Hastings.—Proposed band enclosure near pier (13,000*l.*) and extensions at waterworks (30,000*l.*); Mr. P. H. Palmer, Surveyor, Town Hall, Hastings.

Heathfield.—Diphtheria block at hospital (2,700*l.*); Mr. J. Young, Surveyor, Town Hall, Ayr.

Heywood.—Picture palace, Market-street, for the Heywood Picture Palace Company, Ltd.; Mr. G. E. Tonge, architect, 409, Lord-street, Southport.

Huthwaite. — Library (2,098*l.*); Messrs. Vallance & Blyth, builders, Duke-street, Mansfield.

Ince.—Offices for the Ince Wagon and Ironworks Company, Ltd., Lower Ince.

Ipswich. — Memorial hall, Bolton-lane (1,969*l.*); Messrs. E. Catchpole & Sons, builders, 177 and 179, Princes-street, Ipswich.

Jarrow.—Convenience, Nixon-street; Messrs. Chorlton & Thompson, builders, Back Queen's-road, Jarrow.

Kettering. — School, Clover-hill (2,450*l.*); Messrs. Cooper & Williams, architects, 13, Market-place, Kettering; Messrs. Smith & Bunning, builders, Lancaster-road, Kettering.

Kingston-on-Thames. — Rebuilding "Three Tuns" Public-house, London-road, for the Isleworth Brewery Company, Ltd., St. John's-road, Isleworth.

Kirkcaldy.—Extensions to generating-station (2,195*l.*); Messrs. Smith & Son, builders, Kirkcaldy.

Lambourn.—Workmen's dwellings (880*l.*); Mr. G. Elms, builder, Stockcross, Newbury.

Lanchester.—Completion of two houses, Ormsley-hill (430*l.*); Mr. F. A. Coyle, architect, Front-street, Consett; Mr. F. Ward, builder, Annfield Plain.

Larne.—Gardenmore Presbyterian Church, Victoria-street; Messrs. Hobert & Heron, architects, 7, Donegall-square West, Belfast.

Leigh (Lancs).—Sunday-school (940*l.*); Mr. C. Simpson, architect, Bank-chambers, Railway-road, Leigh; Mr. J. Boydell, builder, Princess-street, Leigh.

Leigh-on-Sea.—Offices, etc., at Gasworks (500*l.*); Mr. J. J. Galer, builder, Fairleigh-drive.

Lennox.—Bakery and stables for Co-operative Society (4,000*l.*); Messrs. Boston, Menzies, & Morton, architects, 11, William-street, Greenock.

Linslade. — Alterations to St. Barnabas' Church; Mr. T. Yirrell, builder, Leighton-road, Linslade.

Linthwaite.—Additions to premises, Hoylehouse; Secretary, Hoylehouse Liberal Club, Linthwaite.

Llrawryglyn.—Alterations to school (560*l.*); Messrs. Jones & Sons, builders, Llanidloes.

Macclesfield.—Co-operative premises; Mr. Jabez Wright, architect, 27, King Edward-street, Macclesfield.

Maidenhead.—Shops and business premises, Queen-street; Mr. H. Stanton-Webber, architect, 23, Queen-street, Maidenhead.

Meltham.—Additions at Spink Mire Mills for Messrs. Quarmby & Sykes, Ltd., rag merchants.

Morpeth.—Workmen's dwellings (5,855*l.*); Mr. G. Douglas, builder, Newcastle.

Newton Mearns.—Additions to school for the Mearns Parish School Board.

Northwich.—Rebuilding constitutional club and new offices, Witton-street (1,655*l.*); Mr. J. Cawley, architect, Bull Ring, Northwich; Mr. C. W. Bostock, builder, London-road, Northwich. Workmen's dwellings for Messrs. Brunner, Mond, & Co., chemical manufacturers, Winnington, Northwich.

Peasedown St. John (Somerset).—Three houses (575*l.*); Mr. W. F. Bird, architect, The Island, Midsomer Norton; Mr. W. J. Heal, builder, High Littleton.

Pendlebury.—Alterations and additions to offices, Bolton-road, for the Worsley Brewery Company, Ltd.

Pershore.—Cottage homes (1,200*l.*); Mr. A. E. Baker, Clerk, Guardians' Offices, Pershore.

Poole.—Plans have been passed as follows:—Five houses, Hilda-road, for Mr. C. H. Goater, on behalf of Mr. J. Lawford: three houses, Buckingham-road, for Mr. A. E. Hoare on behalf of Mr. T. Hopcroft; alterations to laundry, Norrish-road, for Mr. W. J. Williams; eight houses, Wallis Down, for Mr. H. Kendall on behalf of Mr. D. G. Hewett.

Portsmouth.—Boiler house, cold store, etc. (1,712*l.*); Messrs. Wallis & Sons, Ltd., builders, Broadmead Works, Maidstone.

Radcliffe.—Alterations and additions to technical school (7,540*l.*); Messrs. F. M. & A. Nuttall, builders, Whitefield.

Read (near Blackburn).—Additions to mill for Messrs. J. Kemp & Brothers, Ltd., cotton goods manufacturers, 4, Chapel-walks, Manchester.

Shipley.—Engineering works, Hirst-lane, for Messrs. Wigglesworth & Co., Ltd., Moss-street, Bradford.

Southampton.—Alterations and additions to Portswood Car Depôt (879*l.*); Mr. J. Douglas, builder, Southampton. The following plans have been passed:—Additions to Eye Hospital, Bedford-place, for Messrs. Udall & Co.; six houses, St. Andrews-road, for Messrs. Weston & Burnett; seven houses, Norfolk-road, for Messrs. Jurd & Sanders; alterations and additions to the Gordon Arms, Portswood-road, for Mr. A. A. Burnett; additions, Bridge Foundry, Northam, for Messrs. G. P. Wilson & Sons. Plans have been lodged for four houses off Highfield-lane by Mr. W. F. Perkins; and for eighteen houses, Shirley-avenue and Wilton-road, by Mr. J. Smith.

Swansea.—Proposed hospital; Mr. Marcus Hoskins, Estate Agent, Town Hall, Swansea. Proposed buildings, Castle-street, for the Prudential Assurance Company, Ltd., Holborn Bars, E.C. The following plans have been passed:—Buildings, 3 and 4, Cambrian-place, for Messrs. Harries Brothers; buildings, 12, Castle-street, for Mr. Williams; four houses, Eaton-crescent, for Mr. W. H. Harding; additions to Glynn Vivian Mission Hall, Pentremawr-road, for the Trustees; three houses and bakehouse, Langland-street, for Mr. Richard Lacey; alterations, Empire Theatre, Oxford-street, for Messrs. Moss', Ltd.; cinema hall and shop, St. Helen's-road, for Messrs. C. H. Behenna & Co.

Swanwick.—Drill hall (730*l.*); Mr. H. A. F. Smith, architect, Star-chambers, High-street, Gosport; Mr. G. Hackett, builder, Lock's Heath, Swanwick.

Wallsend.—Alterations to store, Frank-street, for the Industrial Co-operative Society; Mr. John A. M. Henderson, builder, Hebburn.

Walsall.—The following plans have been passed:—Ten houses, Sneyd-lane, Bloxwich, for Mr. D. E. Parry; alterations and additions to premises, Park-street, for Messrs E. T. Holden & Son; extensions to electric theatre, High-street, Bloxwich, for Mrs. Mountjoy; additions to shopping, Wolverhampton-street, for Messrs. J. Bailey & Co. A plan has been lodged for the erection of a warehouse, Green-lane, Leamore, by the Talbot-Stead Tube Company, Ltd.

West Pennard. — Restoration of church; Messrs. Merrick & Sons, builders, Silver-street, Glastonbury.

Weymouth.—Bakery, stables, etc., Holly-road, for the Weymouth and District Co-operative Society.

Windsor.—Additions to premises, King's-road, for Messrs. Harrods, Ltd., Brompton-road, S.W. Additions to premises, Alma-road; Mr. E. Bampfylde, builder, 23, Frances-road, Windsor.

Withnell. — Offices for Messrs. Wiggins, Teape, & Co., Ltd., paper manufacturers, Chafford Mill, near Tunbridge.

Worthing.—Pavilion and arcade at shore end of pier (3,261*l.*); Mr. F. Grace, builder, Southampton.

* See also our list of Competitions, Contracts, etc., on another page.

ECTON CHURCH, NORTHAMPTON.

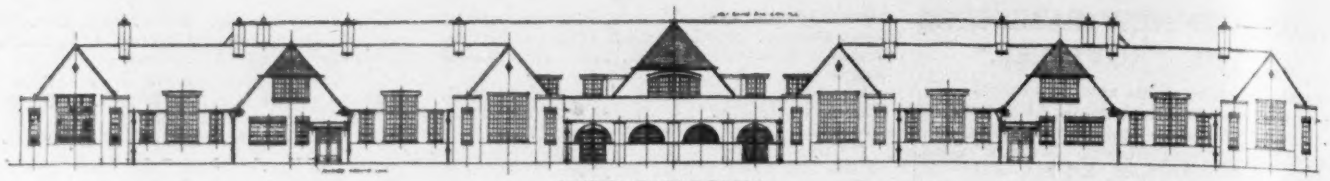
The east window erected in the above church in memory of the late Major-General Sotheby was designed and executed by Messrs. Percy Bacon & Brothers, of London. The work was supervised by Mr. E. de W. Holding, architect, of Northampton.

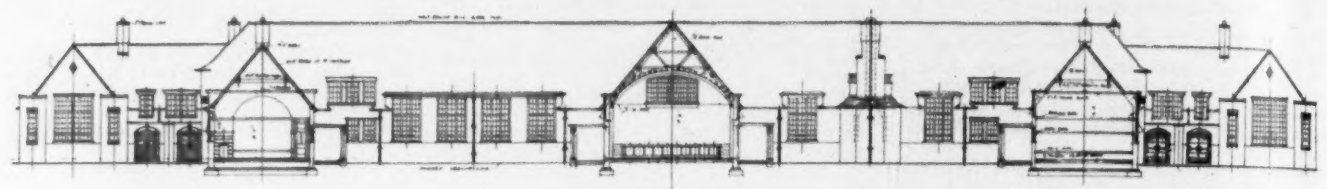
THE FIRE IN ST. PANCRAS.

We read that by the prevision of the architect—who, we may state, was Mr. Keith D. Young, F.R.I.B.A.—the spreading of the flames from Mr. W. Burden's timber-yard, in the night of September 17, to the adjacent vast pile of St. Pancras municipal dwellings, known as Goldington-buildings, was arrested by the brick screen wall, with buttresses, which he required to be erected to the height of the timber store.

LONDON ASSOCIATION OF MASTER DECORATORS.

A meeting of the Executive Committee of the above Association was held at 92, Queen Victoria-street, E.C., on September 9. Mr. T. S. Rowden occupied the chair, and there were also present:—Messrs. J. Anderson, J. H. Campbell, H. J. Honeychurch, Charles Saul, and A. Davidson (Secretary). The General Committee meeting is to be held on October 14 next, at 6.30 p.m., and the annual dinner on Thursday, October 17, at 7.30 p.m.





School for Boys and Girls, Ripley, Derbyshire.

Mr. G. H. Widdows, A.R.I.B.A., Architect.

NEW SCHOOL AT RIPLEY, DERBYSHIRE.

THIS school, which is to be erected at Ripley, Derbyshire, will accommodate about 1,200 children, and marks the latest developments in school planning in this county.

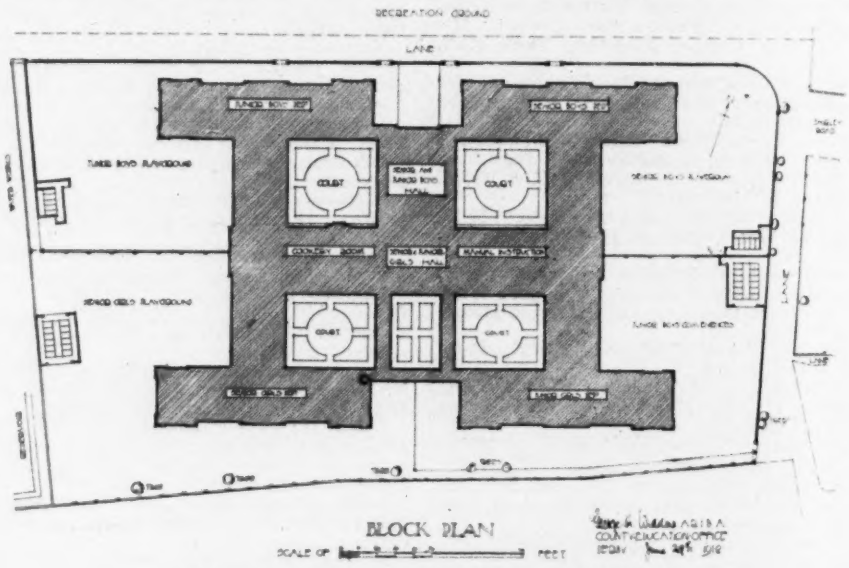
Hitherto it has been the custom to divide children into three groups—boys, girls, and infants. In this case the old grouping is done away with, and in place thereof the children are arranged as juniors and seniors. There will thus be two junior schools, one for boys and one for girls from five years of age up to nine; and there will be two senior schools for boys and girls from about nine years of age until the finish of their school life. By this means the departments are limited to 300 children, which is about the maximum that a head-teacher can supervise satisfactorily if the individuality of the child is to be considered.

Each department will accommodate 302 children, and, though the classes are large, there appears to be no alternative at the present day, owing to the dearth of teachers and the general cost of education. When smaller classes become the rule it will mean that children will have 12 sq. ft. per child instead of 10 sq. ft.

All the rooms are provided with direct through ventilation, all the corridors being open to admit of this. Continued experience tends towards the conviction that the only satisfactory way of ventilating a classroom is by means of windows on two opposite sides, communicating directly with the outside air. When this is the case rooms can be efficiently ventilated by means of hoppers only. Experiments have shown that with a breeze as light as 4 miles per hour the air can be changed by hoppers only ten times per hour. The courts which are necessary to arrange for this ventilation can be used for open-air instruction when the weather permits.

The halls, cookery-room, and workshop are also planned for through ventilation. One hall will be available for junior and senior boys, and the other for junior and senior girls; and halls, cookery-room, and workshop can all be made into one apartment by throwing back the movable partitions which divide them.

The schools will be heated by low-pressure hot water calculated at 30 sq. ft. per 1,000 cubic ft. of contents. The open court to the south of the hall and adjoining the platform has been reserved so that a science laboratory can be erected there in the future. The average cost of schools in Derbyshire is 11*l.* 7s. per head, and it is not expected that the amount will be exceeded in this case.



School for Boys and Girls, Ripley, Derbyshire.

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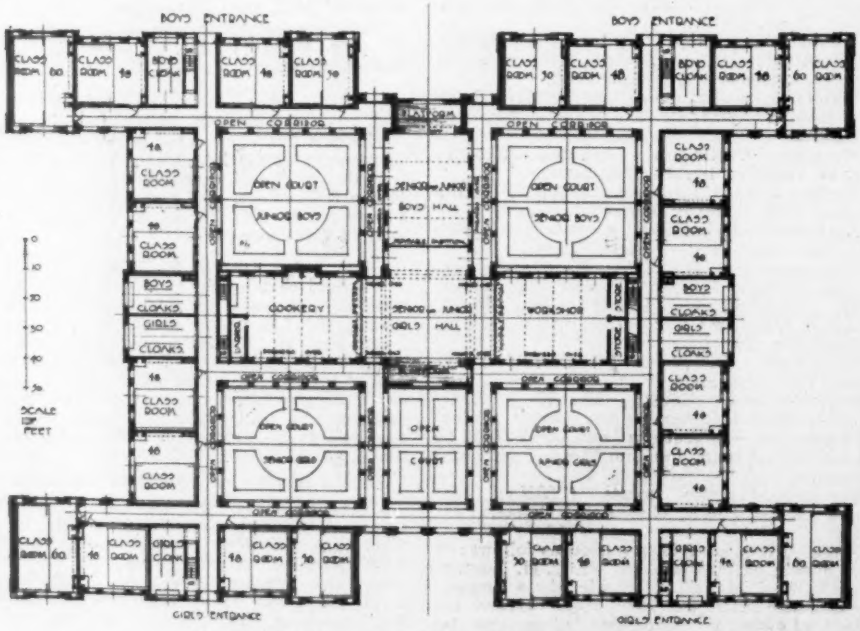

School for Boys and Girls, Ripley, Derbyshire.

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CITY HALL, HULL.

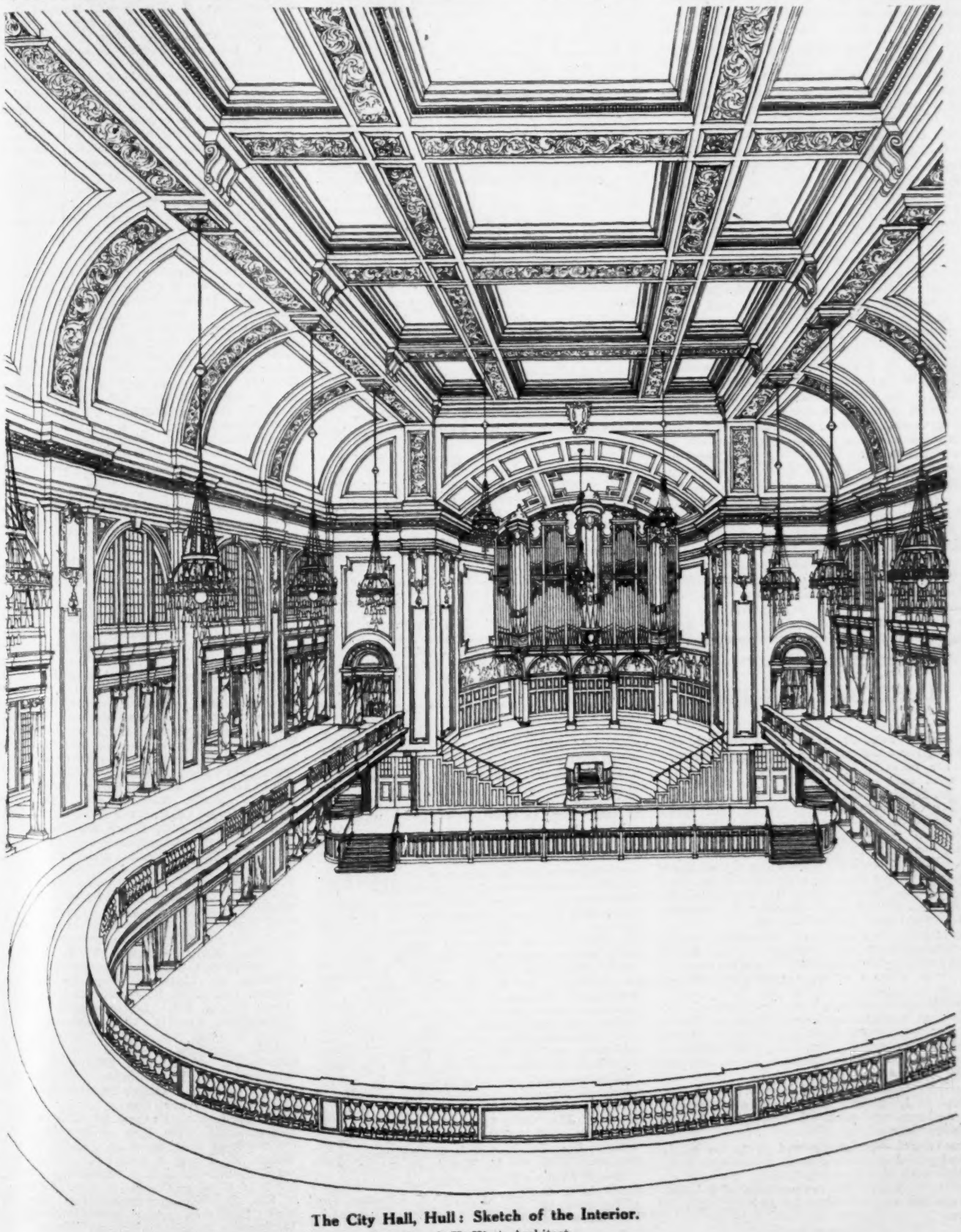
THE Hall, which occupies one of the best sites in the city, forms part of a block of buildings comprising the concert hall, capable of seating 3,000 persons, reception, crush, and retiring rooms, an art gallery, and twenty-seven shops. The main entrance abuts upon the west side of Victoria-square, and the other three sides of the block are bounded by important business streets. The work has occupied a considerable period, as it has been necessary to carry out the scheme piecemeal in order to avoid the disturbing of existing tenancies. The total cost of the building has been something like 100,000*l.* The work has been carried out under the supervision of the City Architect, Mr. Joseph H. Hirst.

COUNTY COUNCIL ART SCHOOLS AND TECHNICAL INSTITUTES.

DURING the past week exhibitions of students' work have been held by the Central School of Arts and Crafts, Southampton-row, W.C., the Camden School of Art, Dalmeny-avenue, Camden-road, N., and the Paddington Technical Institute, Saltram-crescent, W. The order in which we have mentioned these three schools is one of convenience only; those who have visited each exhibition will probably have no difficulty in assigning to them their right positions in the ascending scale of comparison. The art activities of the Central School are legion, and it is not surprising that here and there some quite incompetent work is shown. Speaking generally, however, the work maintains a tolerable level of achievement, and is occasionally brilliantly above mediocrity.

Architecture is poorly represented; as the work is mostly done away and brought to the school for criticism, it is practically impossible to collect really representative drawings for exhibition. The stained-glass shown is fairly good, but the function of the leading in the completed picture has been in some instances imperfectly appreciated, with the result that in one case an otherwise well conceived figure of an angel appears to be throttled by the leading, while an excellently-studied shield, copied from a stall-plate at St. George's Chapel, Windsor, suffers from insufficient support. The cabinet-making class has turned out some good, if not very original, work; a recessed corner-cupboard, veneered with satin-wood, by Mr. A. T. Henderson, is a soundly-constructed and capably-designed piece of furniture deserving of all praise. The art metal-work, shown by the Day Technical School, indicates talent of a high order; the appearance of the copper and silver vessels, most of which are of excellent design, is, however, marred by the absurd affectation of leaving the hammer-marks on the surface—a spelling of Art with a capital "A" which cannot serve any useful end. Quite surprising ability, considering the age of the students, is manifested in the examples of die-sinking shown, and the Joan of Arc plaque, taken from the design of Boutet de Monvel, is particularly worthy of remark. The specimens of heraldic engraving exhibited suggest that the class would do well to turn for inspiration to the XVth century, when heraldry was yet a living art. The illuminating and lettering is a case of "crambe repetita"; the influence of the teacher, excellent in itself, represses all individuality, and in some cases, notably in the illuminated Litany, there is a total absence of congruity. Etching and mezzotint are well represented, and exceptionally good work is shown by Mr. H. Nelson in his little study of a London garret, and by Mr. George Rose in his composition entitled "The Elm Screen." Wood engraving is so hopelessly dead that it would be well not to attempt its revival; if it is ever to compete with the process-block, technique, as well as design, will have to be learned. Miss Ethel Lyne's embroidery is extremely pleasing both in colour and conception; her fire-screen, with its ably conventionalised finches and yew, may be noted. A burse, with the shields of the four English Saints, by Miss C. A. Noble, and a lectern-frontal, by Miss E. M. Lester, with the shield of All Saints, taken from Mr. Dorling's manual on the heraldry of the church, are also noteworthy pieces of embroidery. Mr. L. Jacobs' studies from the moving model are very clever, and generally the studies from the life are entirely competent.

The exhibition of the Camden School of Art, though less catholic in its scope, shows great thoroughness in the work of its students. In modelling and drawing from the life, always a strong point of the school, the work of Mr. Sydney Greaves and Miss D. V. Clarke is of the



The City Hall, Hull: Sketch of the Interior.
Mr. Joseph H. Hirst, Architect.

first rank. The sound methods of teaching which have enabled them to attain their mastery of the structure of the human form are well illustrated by the brilliant anatomical studies of Mr. J. E. Barker and Miss D. A. Baines. A beautiful measured drawing of the pulpit in St. Mary Abchurch, by Mr. E. H. Llewellyn, affords a strong contrast to the wretched design for a capital modelled by the same student, who would do well to seek his inspiration from the work he can portray so capably. Some clever animal studies are shown by Miss Lapthorne, whose designs for colour-prints are also excellent. Miss Tuck's design for an embroidered fire-screen shows the good use to which she has put her careful and accurate plant-studies.

The talent displayed by many of the students of the Paddington Technical Institute is astonishing. There are few architects' assistants who would not be proud of such work as Mr. H. G. L. Krüger's design for a carved and panelled room, which evidences remarkable powers of draughtsmanship, coupled with a sound grasp of style. For sheer brilliance it would be hard to surpass Mr. Smith's design for the decoration of a hall and vestibule. The painting and decorating class have carried into practical execution upon the wall of their classroom a carefully-conceived scheme of decoration; upon the frieze is this inscription:—"Truth is never learned in any department of industry by arguing, but by working"—a precept which might well stand for the motto of the school. Carving in stone and wood, metal-working, and cabinet-making all reach a high degree of excellence, and testify to the ability of the teaching staff in developing the best instincts of the practical craftsmen with whom they have to deal.

Some idea of the quality of the best work produced by the students of the schools under notice in every branch of the arts and crafts may be gained from the foregoing paragraphs; a word may now be said as to the facilities for instruction afforded to the architectural student. The school of architecture and the building crafts at the Central School holds classes every evening in the week during the session, which commenced here, as in the case of the other County Council schools, on Monday last. On Wednesday evenings a course of lectures on "The Growth of a House" is given, and on Saturdays there is a museum class at South Kensington. This latter, which was started last session, was attended also by sculptors, plasterers, mural painters, and general designers. The masters of the school are all practising architects. It will not be out of place here to draw attention to the prospectus and time-table for the current session of the Westminster Technical Institute, Vincent-square, where excellent evening-classes in architecture and construction are held, one evening in the week being devoted to reinforced concrete design.

LONDON COUNCILS.

Barking.—Tenders are to be invited for sewering the road north of the Ripple School; also for making up same and the road on the west side of the school. The tender of Mr. W. E. Sharpless has been accepted for the erection of twenty-eight houses at 171*l.* each. The Surveyor has been instructed to prepare plans and estimates for carrying out street works, etc., in connexion with the above buildings. Plans have been passed for the erection of a factory for the Cape Asbestos Company, Ltd. Messrs. Lawes Chemical Manure Company, Ltd., have lodged plans for the erection of a glover tower at Creeksmouth.

Battersea.—Repairs are to be carried out to the carriageways and footways in four roads at an estimated cost of 602*l.* Electricity mains are to be altered at an approximate cost of 480*l.*

Berkhamsted.—Plans have been passed for additional buildings at Lower Chemical Works and for alterations to Nos. 80 to 86, High-street, for Messrs. William Cooper & Nephews; as have also plans for Messrs. Ayres & Farn for three houses at Gossom's-end.

Bushey.—The tenders of Messrs. W. Bailey & Sons, at 1,579*l.* and 690*l.*, have been accepted for making up part of Grange-road and Nightingale-road.

Camberwell.—Pickwick-road is to be made up and paved as a new street. Plans have been lodged with the London County Council by Mr. W. C. Symes for the erection of a building on the site of Nos. 11 and 13, Slyvan-grove.

Deptford.—A plan has been passed for Messrs. W. Cubitt & Co. for additions to Messrs. Scott's factory in Grove-street.

East Ham.—Sanction has been received from the Local Government Board to the borrowing of 8,628*l.* for the erection of a fire-station and firemen's dwellings. The following plans have been passed:—Mr. W. Cooper, five houses, Dersingham-avenue, and factory, Shaftesbury-road; Messrs. Clemens Brothers, two warehouses, Abbots-road; Mr. J. Smith, seven houses, Mafeking-avenue; Mr. J. Hurst, three houses, Mafeking-avenue; Mr. J. Clark, eight houses, Mafeking-avenue. Plans have been lodged by Mr. W. Harris for five houses, Station-street, North Woolwich; also by Mr. W. Stewart, for alterations to the "Albion" beerhouse, 104, Albert-road, North Woolwich.

Fulham.—The tender of Messrs. H. Windsor & Co. has been accepted at 178*l.* for carrying out alterations and repairs to the economiser buildings at the Electricity Works.

Hackney.—The tenders of the Strand Building Company have been accepted, at 1,151*l.* and 18,657*l.*, for the construction of an underground convenience in Kingsland-road, and for carrying out extensions to the electricity generating-station. Various repair works are to be carried out at an estimated cost of 1,240*l.* Plans have been passed for Mr. M. Miller for the erection of a warehouse in Miller's-avenue, Stoke Newington; as have also plans lodged by Messrs. S. Hayworth & Sons for the erection of four houses in Holly-street, Dalston.

Hammersmith.—The outer 18-in. margins of the London United Tramways Company's track in a portion of Uxbridge-road (approximately 2,000 yds.) are to be repaved with wood at 8s. 2d. per super yard. The Borough Surveyor has been authorised to complete the repaving with wood blocks of the west side of the Broadway. A plan submitted by the Surveyor for rebuilding 130, King-street has been approved.

Kensington.—Tenders are to be invited for making up the extension of Highlever-road as a new street, in accordance with drawings and specifications prepared by the Engineer.

Lambeth.—Plans lodged by Mr. A. H. Williams, for permission to drain ten houses proposed to be erected in Rosendale-road, West Dulwich, have been approved. Plans have been lodged with the London County Council by Messrs. Edwin Evans & Sons for the formation or laying-out of a new street to lead from Brixton-hill to Acre-lane.

Lewisham.—Artificial stone in lieu of tar-paving is to be laid in a portion of Well-meadow-road at an estimated cost of 225*l.* The following plans have been passed:—Messrs. F. & W. Abbiss, five houses, Bartram and Brocklev roads; Mr. F. E. Rosser, six houses, Honor Oak-road; Mr. William Allam, twelve houses, Manwood-road; Messrs. Hill & Tyler, picture palace, Wastdale-road; Mr. A. J. Roddis, six houses, Rushford-road; Mr. James Watt, six houses, Arran-road; Messrs. G. E. Wallis & Sons, Ltd., addition to Pentland House, Old-road, Lee; Messrs. W. J. Scudamore & Sons, five houses, Newstead-road, and four houses off St. Mildred's-road; Messrs. Holliday & Greenwood, Ltd., cinema theatre, High-street; Mr. J. W. F. Phillipson, rebuilding Sunday-school, Stanstead-road.

Wandsworth.—Tenders are to be invited for repairing the carriageways of a portion of Wimbledon Park-road and Viewfield-road, Southfield. Plans have been passed for Mr. A. Dawkins for the erection of nine houses in Clarendon-road, seven in Hotham-road, and nineteen off Clarendon-road, Putney; as have also plans for Mr. J. Johnson for the erection of three shops in Beechcroft-road, Balham.

West Ham.—A portion of Dartmouth-road is to be made up and paved as a new street. The tender of Messrs. Leslie & Co., at 490*l.*, has been accepted for carrying out piling-work at the Corporation electricity station. The following plans have been passed:—Messrs. Dearing & Co., Ltd., alterations and additions to the Hope beerhouse, Leytonstone-road, Maryland Point, Stratford; Mr. P. Foicik, additions to paint store, 36 and 38, Western-road, Plaistow; Mr. A. Webb, alterations to Messrs. J. R. Roberts' stores, 94, Broadway, Stratford; Mr. H. Ashed, three houses, Oriental-road, Silvertown; Mr. H. J. Smith, chemical factory, High-street, Stratford; Messrs. Fuller, Horsey, Sons, & Cassell, additions to Nos. 9 and 10, Carpenters-road, Stratford, for the Excel Company, Ltd. The following plans have been lodged:—Mr. J. H. Gladwell, alterations and additions to Railway Tavern beerhouse, Victoria Dock-road, Custom House; Mr. W. Hancock, cinematograph theatre, site of No. 302, Romford-road, Forest Gate; Sir J. H. Bethell, cinematograph theatre, site of No. 61, Broadway, Stratford.

Wood Green.—Plans submitted by Messrs. C. Hale & Co., for Mr. R. S. Chattey, for additions to the Alexandra Tavern, High-road, have been passed.

GOVERNMENT CONTRACTS.

THE following tenders have been accepted during the past month by the Government Departments named:—*Admiralty, Works Department:* Works services: Coal store, Submarine Depôt, Haslar—Mr. J. Hunt, South Wharf, Cleveland-road, Gosport; diversion of sewage, Haslar—Mr. J. Hunt, South Wharf, Cleveland-road, Gosport; two sheds, Aviation School, Eastchurch—Messrs. J. Harrison & Co., Station Works, Camberwell, S.E. *Admiralty, Contract Department:* Firebricks, etc. —Messrs. Bonnybridge Silica and Fireclay Company, Ltd., Bonnybridge, Stirlingshire; Messrs. Candy & Co., Ltd., Heathfield Station, Newton Abbot, Devon; Messrs. C. Davidson & Co., Ltd., Ewloe Barn, Ewloe, near Chester; Messrs. Martin Brothers, Ltd., 20, Lockyer-street, Plymouth; Messrs. Priestman Collieries, Ltd., Milburn House, Newcastle-on-Tyne; Messrs. Westlake & Co., Galstock, Cornwall. *War Office:* Works services: Alterations and additions, Army Service Corps Officers' Mess, Bulford—Mr. J. Crockerell, Bulford Camp; alterations and additions to Military Hospital, Lichfield—Messrs. T. Lowe & Sons, Curzon-street, Burton-on-Trent; cartridge ranges at Tidworth—Messrs. W. P. Goose & Sons, Milton-road, Gravesend; drainage work, Budbrooke Barracks, Warwick—Messrs. G. F. Fincher & Co., Stratford-on-Avon; dredging at Woolwich Arsenal—Messrs. Flower & Everett, 69, King William-street, E.C.; erection of annexes, Brecon—Mr. B. Jenkins, Watton Saw Mills, Brecon; erection of hospital, etc., Royal Military Academy, Sandhurst—Messrs. Turner & Kersley, Blackwater, Hants; erection of officers' quarters, Woolwich—Messrs. W. F. Bloy, Ltd., Dartford; erection of quarters for resident engineer, Curragh—Mr. T. O'Mahony, "Sunmount," Fermoy; erection of store accommodation, Hyde Park, London—the General Building Company, 45, Chandos-street, W.C.; erection of tent-examining shed, Army Ordnance Depôt, Dublin—Messrs. Smith & Pearson, Ltd., Dublin; erection of unloading shed, Army Ordnance Depôt, York—Messrs. Dennis, Gill, & Son, Nether Hall-road, Doncaster. Periodical works services at: Chatham—Mr. T. Carr, New Crown-street, Halifax: Gosport, Portsmouth, and Winchester—Messrs. G. F. Smith & Co., Eldon-steet, Southsea: Kilbride—Messrs. Skevington Brothers, Derby: Plymouth—Messrs. R. W. Pitcher & Son, 6, Marlborough-street, Devonport: reconstruction of buildings, Leith Fort—Messrs. W. Finlayson & Sons, Balfour-street, Leith; reconstruction of South buildings, Enfield Lock—Messrs. W. P. Goose & Sons, Gravesend; renewing parades, Omagh—Mr. I. Harvey, Enniskillen: repairs and maintenance of War Department buildings at: Carlow—Mr. J. Murphy, Blackrock-road, Cork; Omagh—Mr. J. McGrath, Dublin-road, Omagh; Tralee—Mr. P. Murphy, Greenview-terrace, Tralee; supply and erection of aeoplane repair shed, South Farnborough—Messrs. A. D. Dawnay & Sons, Ltd., 39, Victoria-street, S.W.; supply and erection of aeroplane repair workshop, South Farnborough—Mr. W. Harbrow, South Bermondsey, S.E.; supply and fixing steel shutters, Army Ordnance Depôt, Tidworth—the Sefton Lift and Shutter Company, Sefton Works, Back Parkfield-road, Liverpool; swimming pond for horses, Bulford Camp—Mr. J. Crockerell, Bulford Camp. *India Office, Store Department:* Closets, etc.—Mr. J. Levick, Aston, Birmingham. *Crown Agents for the Colonies:* Cement—the Associated Portland Cement Manufacturers, Ltd., 8, Lloyds-avenue, E.C.; Messrs. Martin, Earle, & Co., Ltd., 139, Queen Victoria-street, E.C.; the Wouldham Cement Company, Ltd., 35, Great St. Helens, E.C.; jetty materials—the Horsley Company, Ltd., Tipton, Staffs; goods shed — the Clyde Structural Iron Company, Ltd., Glasgow. *H.M. Office of Works:* Builders' work: Extension of Aylesbury Post Office—Messrs. G. Tombs & Sons, Buckingham; extenion of Bedford Post Office—Messrs. E. Brown & Son, Ltd., Wellingborough; reconstruction of roofs at British Museum—Messrs. W. E. Blake, Ltd., 9, Southampton-street, Bloomsbury, W.C.; erection of Museum telephone exchange—Messrs. Galbraith Brothers, Ltd., Camberwell Green Works, S.E.; additions and alterations, Portsmouth County Court—Messrs. W. R. Light & Son, 475, Commercial-road, Portsmouth; erection, Stafford new Head Post Office—Mr. H. Smith, Wolverley, Kidderminster; erection, Victoria Telephone Exchange—Messrs. Galbraith Brothers, Ltd., Camberwell Green Works, S.E.; redrainage work, Houses of Parliament—Messrs. Dent & Hellyer, Ltd., 35, Red Lion-square, W.C.; drainage of new wing at Somerset House—Messrs. B. Finch & Co., Ltd., 82, Belvedere road, Lambeth, S.E.; redrainage of Royal Mews at Windsor Castle—Messrs. Mathew Hall & Co., 88, Wigmore-street, W.; iron buildings, Liverpool, Alexandra Dock—Mr. W. Harbrow, Iron Building Works, South

Bermondsey, S.E. *General Post Office:* Laying lines of pipes, Hounslow—Messrs. J. Mowlem & Co., Ltd., Grosvenor Wharf, Westminster, S.W.; laying lines of pipes, North Shields—Mr. G. Bailey, 57, Westgate-road, Newcastle-on-Tyne; laying lines of pipes, Sheffield—Messrs. Airds, Ltd., 22, Queen Anne's-gate, S.W.; earthenware ducts, Cornhill and Leadenhall-street, E.C.—Messrs. J. Mowlem & Co., Ltd., Grosvenor Wharf, Westminster, S.W. *Metropolitan Police:* Erection of police-station at Golder's Green—Messrs. J. Grover & Sons, Wilton Works, New North-road, N.; erection of a section house at Dalston—Messrs. Sheffield Brothers, 1, Downs Park-road, Dalston, N.; reconstruction of Kennington-lane Police-station—Messrs. Prestige & Co., Ltd., 149, Grosvenor-road, S.W. *Commissioners of Woods:* Erection of farmhouse at Raglan—Messrs. J. Burgoyne & Son, Parkyard, Pontypool-road, Pontypool, Monmouthshire. *Commissioners of Public Works, Ireland:* Building works: No. 51, St. Stephen's-green, E., Dublin, adaptation for Office of Public Works—Messrs. G. W. Scott & Co., 26, Usher's-quay, Dublin; extension of Low Park National School, Co. Mayo—Mr. William Killacky, Kiltimagh, Co. Mayo; alterations, Belfast Head Post Office—Messrs. T. & W. Lowry, 219A, Woodstock-road, Belfast.

OBITUARY.

Mr. J. Leighton, F.S.A.

We regret to announce the death, on September 15, his ninetieth birthday, at Harrow, of Mr. John Leighton, the author, as "Luke Limner," of "Suggestions in Design," 1852 and 1881, and of "The Life of Man Symbolised by the Months of the Year," 1866. Mr. Leighton, the son of a bookbinder, and a pupil of Henry Howard, R.A., was an original co-proprietor of the *Graphic*, and a founder of the Ex-Libris and (with Roger Fenton) Photographic Societies. In 1847 he brought out "London Cries and Public Edifices" and "London Out of Town." Of his manifold productions as an illustrator of books we may mention his Baron Bunsen's "Lyra Germanica," 1861; "Book of the Royal Horticultural Society," 1863; R. H. Baynes's "Autumn Memories," 1869; "Paris under the Commune," 1871; and "Madra Natura *v.* the Moloch of Fashion," 1870-4; he wrote and illustrated the *Bookplate Annual*, 1894-9. An address he delivered many years ago at the Royal Institution first aroused the modern taste for Japanese art: he was a leading member of the Royal Society of Arts and of their Copyright Committee: a member of the International Copyright Congresses, Antwerp, 1877, and Paris, 1879, and of the Exhibition Commissions, London, 1851 and 1862; Paris, 1855 and 1867; and Philadelphia, 1867. He was elected a Fellow of the Society of Antiquaries nearly sixty years ago. The interment took place on Saturday in Harrow churchyard.

Sir J. Whittaker Ellis, Bart.

The death, on September 20, at his residence, Wormley Bury, Broxbourne, Herts, is announced of Sir John Whittaker Ellis, Bart., O.M., and Chevalier, 2nd Class, Golden Lion of Nassau, aged eighty-three years. A son of Mr. Joseph Ellis, proprietor of the Star and Garter Hotel, Richmond, he, when a youth, was articled to Alderman Sir John Musgrove, auctioneer and surveyor in the City, of whose firm he became senior partner. He was elected a Common Councillor, 1864, and an Alderman, Broad-street Ward, in 1872; in 1874-5 he was Sheriff of London and Middlesex, and Lord Mayor, 1881-2, his year of office being signalised by the opening of Epping Forest, upon its acquisition by the Corporation, by Queen Victoria, who bestowed a baronetcy upon him, and the opening of the new Leadenhall market. He was the first Mayor of Richmond, to which borough he gave a site for the Town Hall and its gardens; when occupant during many years of Buccleuch House, by the riverside, he played an important share in municipal affairs, and was mainly instrumental in conserving the amenities of Richmond and in the preservation of the Terrace-gardens. About forty years ago he acquired the business of Messrs. Farebrother, Clark, & Co., of Lancaster-place, W.C., auctioneers, surveyors, and estate agents; he then became sole partner of the well-known firm of Messrs. Farebrother, Ellis, Clark, & Co., of Fleet-street, and having, in 1897, taken into partnership Mr. H. D. Egerton, his nephew Mr. R. S. Ellis, Mr. B. I'Anson Breach, Mr. V. S. Galsworthy, and the late Mr. A. Skingle, retired from the firm in 1903. He was often engaged in assessment, arbitration, and compensation cases. He was Surveyor to the London and South-Western and London and Brighton Railway Companies; for the latter he conducted the purchase of lands for extension of Victoria terminus. Sir John Whittaker Ellis was M.P. for Mid-Surrey, 1884-5, and for the Kingston Division, 1885-92; Governor of the Honourable Irish Society, 1882-94; Chairman of the Alliance Bank and Emmanuel Hospital, and a Governor of several charitable bodies; High Sheriff of Surrey, 1899-1900; member of the Carlton, Garrick, and Constitutional Clubs, and Past-Master of the Merchant Taylors' Company. Upon his retirement in June, 1909, from the Court of Aldermen he received a highly gratifying tribute to his long and distinguished public services. The funeral was fixed for yesterday (Thursday) afternoon, at Petersham.

Mr. T. H. Gibbons, M.Inst.C.E.

Mr. T. H. Gibbons, formerly Civil Engineer Superintendent, Great Western Railway, died suddenly at his home in Plymouth on September 17, in his seventieth year. He was educated at Tavistock Grammar School, Marlborough, and King's College, London. He was articled to Mr. D. G. Grove, C.E., and then, as assistant of Mr. P. J. Margary, Great Western Railway, shared in the construction of their lines in Cornwall and Devonshire; in 1891 he was appointed Engineer for the Plymouth Division, and he erected the stone bridges in place of the old wooden viaducts in the western portions of the company's system, besides taking a prominent part in the substitution of the standard gauge for Brunel's broad gauge.

FOREIGN AND COLONIAL.

The Building Trade in Warsaw.

According to the British Consul at Warsaw (Poland), the building trade, which experienced great activity during 1910, continued its satisfactory development during the past year, and the allied trades shared in the prosperity. Loans were granted on easy terms by the banks and financial institutions, and the relations between masters and men being good throughout the year, there was practically no hindrance to successful operations. Though the number of houses built or repaired in Warsaw itself dropped from 1,645 in 1910 to 1,425 in 1911, there was a considerable increase in the building activity in provincial towns and in the country. High rents and the increased cost of living are gradually driving the less well-to-do classes to live in small country places in the neighbourhood of Warsaw, especially such as are served in respect of transport by the principal lines of railways, and in consequence there has been an abnormal development of such villages into small towns. This change has, to a great extent, been assisted by the fact that no extension of Warsaw beyond its limited boundaries has been possible in consequence of the refusal of the military authorities to allow any substantial buildings in the neighbourhood of the fortifications. In August, 1911, this prohibition was, to a great extent, withdrawn, and the near future should open up possibilities for the sale of British building goods in the new areas of construction, which will have now been made available. Much will depend on the extension of the present system of tramways to these new suburbs, and the amelioration of the services of the light railways which exist on both sides of the Vistula. Here again British capital might be used with every prospect of satisfactory returns. Rents, instead of falling, continued to rise, due, no doubt, to the increase of over 15,000 inhabitants during the year. The total population of Warsaw was, in 1911, 797,000, exclusive of military forces of some 25,000 men. The improved building standard is still making great headway; iron construction has made considerable advance, and so-called fireproof buildings are the only type now sanctioned. This naturally creates, and will create, a demand for fireproofing materials, which is worthy of attention from British manufacturers. An obligatory system of municipal fire insurance was introduced into Warsaw in the year 1900, and all buildings have to be insured with the municipal fund up to the actual cost of the building. The demand for bricks was even larger than in 1910, so that all the brickyards were kept busy throughout the year and prices per 1,000 rose still further. Attempts were made to encourage the use of bricks made of sand and cement. The experiment was only successful to a limited degree, as it is difficult to compete with ordinary bricks, which can be made throughout Poland owing to the subsoil being clay, and thus transport from long distances can be avoided. Dealing with the cement trade, the Consul states that the Polish Cement Works, which had produced 600,000 and 1,100,000 barrels of 360 lb. each in 1909 and 1910, respectively, increased the output to 1,400,000 barrels in 1911. The import from Austria-Hungary and Germany was about 80,000 barrels, and as the agreement between the Polish Cement Syndicate and the German and Austria-Hungarian works was maintained during 1911, it was possible to raise local prices again to 8s. per barrel, as compared with 7s. per barrel in the previous year. As a consequence of larger output and higher prices, the Polish cement industry had a very satisfactory year's working and paid dividends varying from 5 to 12 per cent. The activity in this trade can be ascribed to the general prosperity in nearly every branch of industry, and especially to the development in the building trade, both in towns and provinces. Government orders remained at about the same quantities as in 1910. Nearly all the companies increased their plant. Roofing tiles were used in larger quantities in 1911 than in previous years, and insurance companies quoted lower fire premiums for buildings so covered than for those where thatch is employed. This may induce the peasant population to employ tiles to a larger extent than heretofore, but this will only benefit local works, which did well in 1911 and paid fairly high dividends.

Polish Cement and Bricks.

Mr. Consul Clive-Bagley reports that the Polish Cement Works, which had produced 600,000 and 1,100,000 barrels of 360 lb. each in 1909 and 1910 respectively, increased the output to 1,400,000 barrels in 1911. The import from Austria-Hungary and Germany was about 80,000 barrels, and as the agreement between the Polish Cement Syndicate and the German and Austro-Hungarian Works was maintained during 1911, it was possible to raise local prices again to 8s. per barrel, as compared with 7s. per barrel in the previous year. As a consequence of larger output and higher prices, the Polish cement industry had a very satisfactory year's working and paid dividends varying from 5 to 12 per cent. For the first time for ten years there was a demand on the Warsaw Exchange for the shares of Polish cement works, and transactions took place at par and over. The activity in this trade can be ascribed to the general prosperity in nearly every branch of industry, and especially to the development in the building trade, both in towns and provinces. Government orders remained at about the same quantities as in 1910. Nearly all the companies increased their plant. The demand for bricks was even larger than in 1910, so that all brickyards were kept busy throughout the year and prices per 1,000 rose still further, *i.e.*, from 1*l.* 11s. 8d. in 1909, and 2*l.* 10s. 8d. in 1910, to 2*l.* 19s. 1d. in 1911. Attempts were made to encourage the use of bricks made of sand and cement. The experiment was only successful to a limited degree, as it is difficult to compete with ordinary bricks, which can be made throughout Poland owing to the subsoil being clay, and thus transport from long distances can be avoided. Roofing tiles were used in larger quantities in 1911 than in previous years, and insurance companies quoted lower fire premiums for buildings so covered than for those where thatch is employed. This may induce the peasant population to employ tiles to a larger extent than heretofore, but this will only benefit local works, which did well in 1911 and paid fairly high dividends.

TRADE CATALOGUES.

Messrs. S. W. Francis & Co., Ltd., send us their latest catalogue of revolving shutters, in steel and wood, brass shop-fronts, and collapsible or extending steel gates. The rolling shutters manufactured by the firm include interlocking, curvilinear, and corrugated steel lath shutters, and steel-hinged pinewood lath shutters, suitable for every purpose. Among important contracts recently executed for garages by Messrs. Francis are shutters for Messrs. Harrod's Receiving Yard, Chelsea; the Royal Automobile Club, Pall Mall; the General Motor Cab Company, Walham Green; and Holkham Hall, Norfolk.

Messrs. Thomas Faldo, of Somerset Wharf, Rotherhithe, and 1, Arundel-street, Strand, W.C., forward us a common-sense pamphlet, entitled "A Few Simple Facts about Asphalt," in which they point out the distinction between foreign and British asphalt, and the points to be guarded against in each case. Messrs. Faldo manufacture at their works in London asphalt from the Seyssel and Limmer mines, and can personally guarantee the source from which the raw material is derived, so that "Seyssel" and "Limmer" are not merely "trade names," or, to speak more precisely, "trade lies," but truthful statements of fact. British asphalt is also a specialty of the firm, who have been in the business since the infancy of asphalt as a building material.

(*Continued on page 367.*)

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xix.; Auction Sales, xxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

SEPTEMBER 30.—**Dublin.**—UNIVERSITY COLLEGE: NEW BUILDINGS.—Limited to architects in Ireland. Assessor, Mr. H. T. Hare, F.R.I.B.A.

SEPTEMBER 30.—**Llanelly.**—SCHOOL, ETC.—The Llanelly Education Committee invite competitive designs and estimates for school buildings and domestic subjects centre at Stebonheath-terrace. Assessor, Mr. G. E. Halliday, F.R.I.B.A. See advertisement in issue of August 2 for further particulars.

OCTOBER 7.—**Beckenham.**—PUBLIC ELEMENTARY SCHOOL.—Mr. A. W. S. Cross, F.R.I.B.A., assessor. Selected architects only.

OCTOBER 14.—**Balham.**—SWIMMING BATH.—The Wandsworth B.C. invite designs for a Public Swimming Bath. See advertisement in issue of August 16 for further particulars.

OCTOBER 29.—**Glasgow.**—DESIGNS FOR EXTENSION OF MUNICIPAL BUILDINGS.—The Glasgow Corporation invite architects to submit preliminary sketch designs in competition for the extension of the Municipal buildings. Five will be selected to submit complete drawings in final competition. See advertisement in issue of July 12. Dr. Burnet, assessor. Deposit, 1*l.* 1s

OCTOBER 31.—**Huddersfield.**—TOWN PLANNING.—The Housing and Town Planning Committee of the Huddersfield Corporation invite designs for the laying-out of certain areas within the county borough and part of an adjacent suburb. Premiums 100*gs.*, 50*gs.*, and 25*gs.* Deposit of 2*l.* 2s. See advertisement in issue of August 2 for further particulars.

OCTOBER 31. — **Llandudno.** — LANDSCAPE GARDENING.—The Llandudno U.D.C. invite designs for laying-out land adjoining the Happy Valley, about 20 acres in extent. See advertisement in issue of September 6 for further particulars.

NOVEMBER 1.—**Ottawa.**—MONUMENT TO KING EDWARD VII.—Sketch models in plaster to be sent to the Director of National Art Gallery, Ottawa. Particulars from the Public Works Department, Ottawa (see p. 174, August 9).

DECEMBER 1.—**Bulgaria.**—DESIGNS FOR A ROYAL PALACE AND LAW COURTS.—Particulars from the Commercial Intelligence Branch of the Board of Trade, Basinghall-street, E.C. (see p. 173, August 9).

DECEMBER 2.—**Carlisle.**—SCHOOL BUILDINGS, ETC.—Particulars from the City Surveyor, 36, Fisher-street, Carlisle.

MARCH 1, 1913. — **Rangoon.** — MUNICIPAL BUILDINGS.—The Committee of the Municipality of Rangoon invite designs for the new Municipal Buildings. Honoraria of 300*l.*, 200*l.*, and 100*l.* respectively for first, second, and third. See advertisement in August 2 and 30 for further particulars.

NO DATE.—**Jordanhill, Glasgow.**—PROPOSED TRAINING COLLEGE.—Limited to six firms, named in "Competition News," December 1, page 635.

NO DATE.—**Motherwell.**—HIGH SCHOOL.—Dr. Burnet, assessor. Premiums 50*l.*, 30*l.*, and 20*l.*

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 28.—**Aberavon.**—REBUILDING.—For the rebuilding of the Temple of Fashion, Aberavon. Plans and specifications with Mr. F. B. Smith, M.S.A., Port Talbot.

SEPTEMBER 28. — **Northampton.** — HALL, ETC.—For erection of drill hall and alterations to the Militia Stores, Northampton; riding school for the Northamptonshire Territorial Force Association. Names to the architect, Major J. W. Fisher, Wellingborough.

SEPTEMBER 28. — **Talywain.** — WORKS.—For carrying out works at the Commercial Inn, Talywain, Mon., for Messrs. A. Buchan & Co., Rhymney. Specifications, etc., with Mr. Thomas Roderick, architect, Ashbrook House, Clifton-street, Aberdare.

SEPTEMBER 28. — **Walshtown.** — REPAIRS.—For the carrying out of certain repairs to the Dispensary at Walshtown. Specification at the Board-room, Workhouse, Midleton.

SEPTEMBER 30.—**Birkenshaw.**—HOUSE.—Erection of a detached house in Drub-lane, Birkenshaw. Plans seen, and quantities from Messrs. Howorth & Howorth, architects, Old Bank-chambers, Cleckheaton.

SEPTEMBER 30.—**Harrogate.**—WALLS.—For erection of boundary walls to the new cemetery, Wetherby-lane. Mr. C. E. Rivers, A.M.Inst.C.E., Borough Engineer and Surveyor.

SEPTEMBER 30 — **Pengam.**—HOUSES.—Erection of officials' houses at Britannia Pits, Pengam, for the Powell Duffryn Steam Coal Company, Ltd. Plans and specifications with Mr. George Kenshole, M.S.A., Station-road, Bargoed.

SEPTEMBER 30. — **Stockport.** — BAY — Taking down one of the bays of the Covered Market, and incidental works. Plans, sections, and general conditions seen, and specification with form of tender, from Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Town Hall, Stockport.

SEPTEMBER 30. — **Talywain.**—HALL.—For erection of a hall in connexion with St. Thomas' Church, Talywain Drawings and specification with Messrs. Lougher & Co., architects, Bank-chambers, Pontypool.

OCTOBER 1.—**Farnworth.**—EXTENSION.—For an extension to the piggeries at the Workhouse, Fishpool, Farnworth. Plans and quantities from Mr. John Ward, architect, 24, Mawdsley-street, Bolton.

OCTOBER 2. — **Southampton.**—ADDITIONS.—For alterations and additions to "D" Warehouse, Town Quay, Southampton. Drawings, specifications, and conditions with Mr. E. Cooper Poole, A.M.Inst.C.E., Engineer to the Board, at the Board's Offices, Town Quay, Southampton. Quantities and Form of tender on deposit of 1*l.*

* OCTOBER 3.—**Holbrook Ford.**—BRIDGE.—The Herts C.C. invite tenders for constructing a bridge across River Beane at Holbrook Ford, situated on the main road between Aston and Bennington. See advertisement in this issue for further particulars.

OCTOBER 3.—**Southport.**—EXTENSION.—For the extension of the South Marine-gardens (including the continuation of the lake promenade and of the concrete wall round the marine lake, etc.). Plans seen, and specification and form of tender, at the Borough Surveyor's Office, Town Hall, Southport. Deposit of 2*l.* 2s

OCTOBER 3. — **Twyford.** — COTTAGES.—For the erection of six cottages at Twyford, Bucks. Plans with the Surveyor, Mr. Leonard Bell, Council Offices, Buckingham.

OCTOBER 4. — **Chester.** — ADDITIONS.—For the proposed alterations and additions to the Workhouse, Boughton Heath, Chester. Plans, specification, quantities, and form of tender from the architects, Messrs. John H. Davies & Sons, 14, Newgate-street, Chester, on deposit of 1*l.* 1s.

OCTOBER 4. — **Featherstone.** — ALTERATIONS.—For alterations to North Featherstone-lane Council school. Plans seen, and specifications with quantities from the Education Architect, County Hall, Wakefield. Deposit of 1*l.*

OCTOBER 4.—**Middlesbrough.**—ENLARGEMENT.—For the enlargement of Middlesbrough Post-Office. Drawings, specification, and a copy of the conditions and form of contract at Middlesbrough Post-Office. Quantities and forms of tender, on deposit of 1*l.* 1s., from the Secretary, H.M. Office of Works, etc., Storey's-gate, London, S.W.

OCTOBER 4.—**Portway.**—ADDITIONS.—For additions and alterations at the girls' school at Portway, Wells. Plans and specification with the architect, Mr. A. J. Pictor, A.R.I.B.A., Bruton, Somerset. Deposit of 1*l.* 1s.

* OCTOBER 5.—**Millbank, S.W.**—NEW BUILDINGS.—The Crown Agents for the Colonies invite tenders for new buildings, Millbank, S.W. See advertisement in this issue for further particulars.

OCTOBER 7.—**Altrincham.**—CONVENIENCE.—For the erection of a public convenience in Kingsway. Plans seen, and quantities and forms of tender from Mr. H. E. Brown, Surveyor, Town Hall, Altrincham.

OCTOBER 7. — **Birkenhead.**—GALLERY.—For the construction of a gallery in the swimming bath at the Argyle-street South Baths. Plans and particulars seen, and form of tender, with specification and quantities, from Mr. C. Brownridge, M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Birkenhead, on deposit of 5s.

OCTOBER 7.—**Dundalk.**—ADDITIONS.—The Great Northern Railway Company (Ireland) invite tenders for alterations and additions to their locomotive department offices at Dundalk. Drawings at the Engineer's Offices at Dublin and Belfast. Quantities and specification, on deposit of 2*l.* 2s., from Mr. T. Morrison, Secretary, Secretary's Office, Amiens-street Terminus, Dublin.

OCTOBER 8.—**Ogmore Vale.**—ALTERATIONS.—For extensive alterations to the Fox and Hounds Hotel, at Ogmore Vale, for the Rhondda Valley Breweries Company, Ltd. Plans, etc., seen, and quantities, on deposit of 2*l.* 2s., from Mr. Thos. J. Evans, architect, The Court, Pencoed.

OCTOBER 9.—**Tipton.**—HOUSE, ETC.—Erection of a Council school and caretaker's house at Princes End, Tipton. Architects, Messrs. Scott & Clark, Market-street, Great Bridge, Tipton. Deposit of 3*l.* 3s.

* OCTOBER 10. — **Birmingham.** — BOUNDARY WALLS.—The Commissioners of H.M. Works and Public Buildings invite tenders for boundary walls on site of proposed new telegraph factory. See advertisement in this issue for further particulars.

OCTOBER 10.—**Bowderdale.**—ALTERATIONS.—For alterations to the farmhouse, Bowderdale, Wasdale, Cumberland. Quantities and plans from Mr. J. H. Rea, Gatehouse, Eskdale, Cumberland. Deposit of 2*l.* 2s.

OCTOBER 10.—**Carnarvon.**—COTTAGE.—For erection of a gauger's cottage and stores at Dolgarrog, for the Conway and Colwyn Bay Joint Water Supply Board. Plans and specification with the Engineer, Mr. T. B. Farrington, Trinity-square, Llandudno.

OCTOBER 10. — **Purley.** — EXCHANGE. — For the erection of Purley new Telephone Exchange. Drawings, specification, and a copy of the conditions and form of contract at the Croydon General Post-Office. Quantities and forms of tender, on deposit of 1*l.* 1s., from the Secretary, H.M. Office of Works, etc., Storey's-gate, London, S.W.

* OCTOBER 14. — **Leicester.** — ALTERATIONS AND ADDITIONS.—The Commissioners of H.M. Works, etc., invite tenders for alterations and additions to the Leicester Inland Revenue Offices. See advertisement in this issue for further particulars.

* OCTOBER 15. — **Battersea.** — EXTENSION OF POST-OFFICE. — The Commissioners of H.M. Works, etc., invite tenders for the extension of Battersea District Post Office. See advertisement in this issue for further particulars.

* OCTOBER 16. — **Herne Bay.** — PAVILION AND CONCERT HALL.—The Herne Bay U.D.C. invite tenders for a pavilion and concert hall on the East Cliff. See advertisement in this issue for further particulars.

* OCTOBER 21. — **Child's Hill.** — ARTISANS' DWELLINGS.—The Hendon U.D.C. invite tenders for fifty artisans' dwellings. See advertisement in this issue for further particulars.

* OCTOBER 21. — **Hendon.**—FIRE-STATION.—The Hendon U.D.C. invite tenders for central fire-station at The Burroughs. See advertisement in this issue for further particulars.

NO DATE. — **Burslem.** — OFFICES.—Erection of new offices, Moorland-road, Burslem, for the Burslem Mutual Burial Society Mr. Reginald T. Longden, architect, Town Hall-chambers, Stoke-on-Trent.

NO DATE. — **Crewe.**—CHIMNEY.—Ornamental, tall, and massive chimney-stack in Crewe Hall-gardens to be taken down. Mr. W. McCracken, Englesea House, Crewe.

NO DATE. — **Milnthorpe.**—BUILDINGS.—For re-instating the farm buildings at Viver Farm, Milnthorpe, and for building additional byres. Plans and specifications with Mr. John Stalker, M.S.A., architect, 57, Highgate, Kendal.

NO DATE. — **Newcastle - upon - Tyne.** — MORTUARY, ETC.—Erection of a mortuary and inquest-room at the Old Toll House, Swing Bridge, and a post-mortem room under the High Level Bridge. City Estate and Property Surveyor, Town Hall, Newcastle-upon-Tyne.

NO DATE. — **Outwood.**—ADDITIONS.—For additions and alterations to house at Rook's Nest, Outwood. Mr. W. Wrigley, A.R.I.B.A., architect, 2, King-street, Wakefield.

NO DATE. — **Raunds.**—SCHOOL.—For the erection of a new public elementary school in the parish of Raunds. Architects, Messrs. Blackwell & Riddey, 53, High-street, Kettering.

NO DATE. — **Slaithwaite.** — HOUSE, ETC.—For erection of house and workshop in Meal Hill-lane, Slaithwaite. Plans from Mr. Arthur Shaw, architect, Golcar.

NO DATE. — **Torquay.** — ALTERATIONS. — For various alterations and improvements at the Swiss Café, Victoria-parade, Torquay. Mr. F. G. Moore, A.M.Inst.M.E., architect and surveyor, 9-10, Fleet-street, Torquay.

NO DATE. — **Wakefield.** — ALTERATIONS.—For alterations to the cloakrooms, etc., at the Eastmoor Council schools, Wakefield. Mr. W. H. Ogden, architect, Peterson-road, Wakefield.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 28. — **Barnoldswick.**—BOREHOLE.—For the sinking of an 18-in. borehole to a depth of 800 ft., pump chamber, pump, with a 75 effective h.p. horizontal producer-gas engine and suction-gas plant, at pumping station, for the Gas and Water Committee. Plans seen, and specification, with form of tender, from Mr. J. W. Thompson, Engineer and Manager, Gas-works, Barnoldswick.

ENGINEERING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

OCTOBER 3. — **Aston.**—BRIDGE.—For constructing a bridge across the River Beane at Holbrook Ford, on the main road between Aston and Bennington. Drawings, specification, and agreements at the County Surveyor's Office, Hatfield. Deposit of 1*l.* 1s.

OCTOBER 7.—**Somerset.**—BRIDGES.—For partial rebuilding in masonry and repair of Ilton two bridges on the main road between Ilminster and Langport at two miles from Ilminster. Drawings, specification, and form of contract at the County Surveyor's Office, Wells. Quantities on deposit of 2*l.* 2s.

NO DATE.—**Dinas Powis.**—REPAIRS, ETC.—For works of repair to the mill stream banks and weirs, including cleaning out the bed of the stream, repairing masonry bridge, etc., at Dinas Powis. Surveyor, Mr. W. H. D. Caple, F.R.I.B.A., 2, Church-street, Cardiff. Specification on deposit of 10s.

FURNITURE, PAINTING, MATERIALS, etc.

SEPTEMBER 27. — **Celbridge.** — PAINTING.—For the painting of the Workhouse chapel and a portion of the Workhouse fever hospital, in accordance with a specification prepared by Mr. A. J. O'Connor, C.E., which may be seen at the Board-room, Celbridge.

SEPTEMBER 28.—**Exeter.**—PAINTING.—For painting the exterior wood and iron work of the Castle, Exeter. Particulars and specifications from Mr. E. H. Harbottle, architect, County-chambers, Exeter.

OCTOBER 1. — **Keighley.** — PAINTING. — For internal painter's work at the Workhouse. Quantities from Messrs. Moore & Crabtree, York-chambers, Keighley, architects.

OCTOBER 1.—**Manchester.**—POINTS, ETC.—The Tramways Committee invite tenders for the supply of permanent-way points, tongues, and hardened steel centres. Specifications and forms of tender from Mr. J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester, on deposit of 1*l.* 1s.

OCTOBER 1. — **Sutton Langley.** — PAINTING.—For painting and decorating the whole of the interior and exterior of the schoolmaster's house and outbuildings. Specification from Mr. Frederick May, Clerk to the Committee, 43, Church-side, Macclesfield.

OCTOBER 2.—**Thurne.**—REPAIRING, ETC.—For recolouring and repairing tower and churchyard wall of Thurne Church, Great Yarmouth. Apply to Rector or Churchwardens.

OCTOBER 3. — **Cumberland.** — PAINTING.—For sundry painting works at the police-stations. Specifications with Mr. Geo. Dale Oliver, F.R.I.B.A., County Architect, 68, Lowther-street, Carlisle.

OCTOBER 8. — **Acton.**—PAINTING, ETC.—For the cleaning and repainting engine-sheds, messrooms, offices, etc., at Old Oak Common, near Acton, for the Great Western Railway Company. Plans and specifications seen, and forms of tender and quantities, at the office of the Engineer, at 7, Eastbourne-terrace, Paddington

* OCTOBER 16. — **London.**—PAINTING, ETC.—The Receiver for the Metropolitan Police District invites tenders for repairing, maintaining, and decorating police-stations, police-courts, houses, buildings, etc., within four miles of Charing Cross, for three years from January 1 next. See advertisement in this issue for further particulars.

NO DATE. — **Goole.**—PAINTING.—For the painting and decorating of the interior, No. 15, Burlington-crescent, Goole. Particulars at the Estate Office, Rawcliffe.

NO DATE. — **Merthyr.** — RENOVATING. — For renovating the Red Cow Inn, Glebeland-street, and the Duffryn Arms Inn, Brecon-road, Merthyr, for Messrs. Giles & Harrap, the Brewery. Particulars from Mr. C. M. Davies, M.S.A., 112, High-street, Merthyr.

ROADS, SANITARY AND WATER WORKS.

SEPTEMBER 28.—**Tadcaster.**—SEWAGE.—For the construction of about 250 yds. of 9-in. sewer, with manholes, etc., at Appleton Roebuck. Specifications and quantities from Mr. H. C. Wood, surveyor, Tadcaster.

SEPTEMBER 30.—**Cowes.**—GRAVEL, ETC.—For the supply of gravel and other road material. Specification and form of tender from Mr. John W. Webster, Engineer and Surveyor, Cowes, I.W.

SEPTEMBER 30.—**Thrapston.**—SEWAGE.—For the construction of a sewer, about 397 yds. in length, in Brigstock Village. Plans, sections, and specifications, on deposit of 5s., from Mr. T. Lloyd, Surveyor, Thrapston.

SEPTEMBER 30. — **Warrington.** — FLAGS.—For 300 sq. yds. of 2½-in. concrete flags. Specifications, forms of tender, and information at the office of the Borough Surveyor, Town Hall.

OCTOBER 1. — **Chichester.**—GRANITE, ETC.—For the supply of 1,000 tons of 2-in. broken granite, basalt, or other approved material. Further particulars from the City Surveyor, Mr. Frank J. Lobley, A.M.Inst.C.E.

OCTOBER 2. — **Ramsgate.** — CEMENT.—For the supply of Portland cement. Schedule and form of tender from Mr. T. G. Taylor, Borough Engineer and Surveyor, Municipal Offices, Ramsgate.

OCTOBER 3.—**Oban.**—WIDENING.—For widening and metalling a portion of the public road in the Pass of Brander. Plans and specifications seen, and quantities from Mr. K. Macrae, District Surveyor, Columba-buildings, Oban.

OCTOBER 4.—**Bishop's Stortford.**—MATERIALS.—For the supply of materials. Tender form from the Engineer and Surveyor, Mr. Robert S. Scott, A.M.Inst.C.E., Council Offices, Bishop's Stortford.

OCTOBER 5. — **Ruyton.** — MATERIALS.—For the supply of 500 tons of 2½-in. macadam, 400 tons of 2-in macadam, and 100 tons of granite chippings. Tenders to Mr. G. W. Swift, Clerk, Public Offices, Ruyton.

OCTOBER 5. — **Teddington.** — ROADS.—For the making-up and improvement of High-street, Twickenham-road, and Manor-road. Plans and specifications seen, quantities and form of tender, on deposit of 2*l.* 2s., from Mr. M. Hainsworth, Surveyor, Council Offices, Teddington.

OCTOBER 7.—**London.**—ROADS.—For making-up with tarred bituminous or asphaltic materials certain roads and parts of roads at Muswell Hill, N. Forms of tender, etc., and particulars from Mr. E. J. Lovegrove, Borough Engineer and Surveyor, Municipal Offices, Highgate.

OCTOBER 7. — **Stanley.**—STREETS.—For forming and completing Spen-street, Stanley; also for surface-water drainage at South Moor and Stanley. Plans and specifications seen, and quantities and forms of tender from Mr. A. Routledge, Surveyor, Council Buildings, Stanley.

OCTOBER 7. — **Whitley.**—WORKS.—For carrying out public improvement works in the reconstruction of footways in Marden and Rockcliffe Wards. Plan and specification seen, and form of tender from Mr. A. J. Rousell, A.M.Inst.C.E., Surveyor to the Council, Council Offices, Whitley Bay.

* OCTOBER 8. — **East Ham.**—TAR-PAVING.—The East Ham Education Committee invite tenders for tar-paving the playgrounds at Vicarage-lane School. See advertisement in this issue for further particulars.

OCTOBER 12. — **Rotherham.** — PIPES, ETC.—For the excavating, laying, jointing, and filling in of about twenty-one miles of cast-iron spigot and socket pipes. Particulars and forms of tender from the Engineer to the Council, Mr. B. Hey, M.Inst.Mun.E., Surveyor's Offices, Imperial-buildings, Rotherham.

* OCTOBER 14. — **Kensington.**—ROAD-MAKING.—The Council of the Royal Borough of Kensington invite tenders for making-up portion of roadway of Highlever-road. See advertisement in this issue for further particulars

* OCTOBER 15.—**Kirkby-in-Ashfield.**—SEWERAGE WORKS.—The Kirkby-in-Ashfield (Notts) U.D.C. invite tenders for sewerage and extensions to the sewage-disposal works. See advertisement in this issue for further particulars.

OCTOBER 30. — **Fort-Augustus.** — DRAINAGE.—For the construction of drainage works, comprising upwards of 3,000 lin. yds. of pipe sewers, together with flushing tanks, manholes, septic tanks, etc., at three outfalls, and other relative works. Plans and specifications with quantities from Messrs. Geo. Gordon & Co., civil engineers, Inverness.

NO DATE. — **Cardiff.** — ROAD.—For about two miles of road-making. Mr. W. B. Rees, architect, 3, Dumfries-place, Cardiff.

NO DATE.—**Fraserburgh.**—FOOTWAY.—For relaying the footway of Bellalea property on the north side of Victoria-street with granite kerb and cement concrete. Specifications with Mr. W. Alexander, Burgh Surveyor.

NO DATE. — **Upper Langwith.**—SEWAGE.—For works of sewerage in the parish of Upper Langwith. Particulars from the Engineer, Mr. F. P. Cook, Leeming-street, Mansfield.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*CLERK OF WORKS	Huddersfield Boro' Council	Not stated	Oct. 3
*CLERK OF WORKS	Broadstairs, etc., U.D.C.	3*l.* per week	Oct. 9

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*OLD BUILDING MATERIALS, 136, NORWOOD ROAD, S.E.—On the Premises	Veryard & Yates	Oct. 3
*COMMERCIAL MOTOR CHASSIS—Mill-lane Depot of L.G.O.C., Ltd.	Stuart A. Curzon	Oct. 14
*FREEHOLD BUSINESS PREMISES AND LANDS, NORTHAMPTON—On the Site	Peirce & Thorpe	Oct. 16
*FREEHOLD SITES, SOUTHWARK—At the Mart	Field & Sons	Oct. 22
*BUILDING SITES, ABINGER, SHERE, AND GOMSHALL (SURREY)—At the Mart	Driver, Jonas, & Co.	Oct. 22
*FREEHOLD LAND—Brentwood	Browett & Taylor	Nov. 1

TRADE CATALOGUES—*continued from page 365.*

Messrs. Swain, Verney, & Co. send us their latest catalogue of brass and iron goods, chiefly door and window furniture. Among the items of interest which more particularly claim attention, we notice the "Reliance" patent lock, an excellent contrivance designed to operate panic-bolts from the outside. By this means a door, on which a panic-bolt is fixed, may be used when required as an ordinary entrance door, by means of the external brass knob which turns a spindle and so operates the bolt. By a turn of the key in the lock the brass knob is put out of action, leaving the bolt free to act only on pressure from within in the usual way. The McCabe tubular ball-bearing hangers for "accordion" partitions are admirably straightforward and simple in design, and are fitted with ball-bearings throughout. The blocks in the catalogue show the general principle and the manner in which the fitting may be concealed. Partitions hung in this manner have been supplied to the London, Birmingham, and Sheffield Council Schools. The same principle is applied to heavy barn or warehouse doors, and to overhead trollies, which are also made to run on the bottom flange of the ordinary I beam. Messrs. Swain, Verney, & Co. also supply the "Anglo" patent liquid door-spring and check (a well-designed contrivance, suitable for both right and left hand doors), cloakroom fittings, fanlight openers, and builders' ironmongery of nearly every description.

We have received from the National Radiator Company, Ltd., particulars of a new type of damper regulator for low-pressure hot-water boilers. The regulator has a very wide range of action, and by shifting the weight provided on the lever, the water in the boiler can be maintained at any temperature between 120 and 220 deg. Fahr. The construction of the appliance is very simple, the regulator consisting essentially of an outer dome enclosing metal bellows connected by means of a tube with the bulb, which should be inserted at or near the flow outlet of the boiler. The bellows and a portion of the bulb are filled with a highly volatile liquid responding immediately to the slightest change of temperature. By means of a simple plunger attached to the upper wall of the bellows, the expansion of the latter has the effect of actuating a rocker and the lever, to which are connected the draught doors of the boiler. The fulcrum carrying the damper lever is pivoted on knife-edge bearings to ensure extreme delicacy of movement and freedom from friction, and, as the distance between the pivots on the fulcrum is 1¼ in., the regulator possesses great power.

PATENTS.

APPLICATIONS PUBLISHED.*

14,740 of 1911.—Everard Richard Calthrop, Leonard Erskine Hill, and Herbert William Child: Production of sash-bars and the like for use in glazing roofs, windows, and structures in general.

18,951 of 1911.—Arthur George Grice and George Anderson & Co.: Apparatus for stone and marble cutting and for like purposes.

19,102 of 1911.—George Chisholm: Flanged metal pipes, particularly applicable for effecting joints with water-closet cisterns.

19,133 of 1911.—Alfred James Hill: Joints for tubular srtuctures.

19,175 of 1911.—Benjamin Burnette and Frank Centennial Avery: Hinges.

19,916 of 1911.—Henry Augustus Allen: Stoves and fireplaces.

21,292 of 1911.—Frederick Herbert Sharpe: Method of and apparatus for manufacture of white lead.

23,917 of 1911. William Knott, Frederick Charles Giles, and Alfred Giles: Casement fastenings and the like.

24,070 of 1911.—Samuel Stott and John Thomas Booth: Planks employed by painters and decorators.

24,831 of 1911.—Thomas Baird, jun.: Construction of floors for buildings.

26,403 of 1911.—Dr. August Kahr: Machines for manufacturing hollow bricks closed on all sides.

29,166 of 1911.—Alldays & Onions Pneumatic Engineering Company, Ltd., and Oswald Stott: Radiators for heating buildings and the like.

1,794 of 1912.—William Cheyne: Means for preventing rain, dust, and draught from entering under doors and hinged windows.

2,046 of 1912.—Otto Schultz: Construction of gratings, openwork girders, or other load-suporting means formed of metal strips welded together.

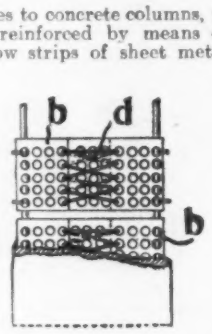
8,415 of 1912.—Victor Winkler: Ruling and drawing devices.

12,487 of 1912.—Emma von Woisky: Self-feeding paint brushes.

SELECTED PATENTS.

10,343 of 1911.—Izel Behrmann: Reinforced concrete.

This relates to concrete columns, piles, beams, which are reinforced by means of comparatively narrow strips of sheet metal *b* of wire

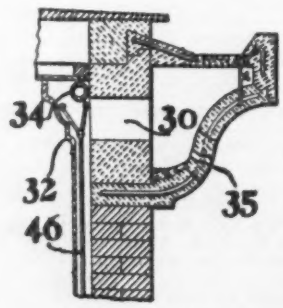


10,343 of 1911.

netting, placed successively around the longitudinal rods as the concrete is moulded. The strips *b* may be plain, and their longitudinal edges either overlap and are secured with wire binding *d*; or the edges are slightly separated and connected with staples.

11,073 of 1911.—Henry Jacob Wagner: Roof gutters and cornices.

This relates to a combined gutter and cornice which consists of superposed blocks, the cornice



11,073 of 1911.

being either hollow and wholly or partially closed at the top, or solid with a draining groove in the top block. A hollow cornice is provided with a perforated cover, and also a hinged ventilator 32, operated by a concealed rod 46, and heating-means 34, fitted on the inside of the wall. Perforations 35 prevent the water from overflowing into the ventilating aperture 30.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

PUBLISHER'S NOTICES.

Tel., 6112 Gerrard. Telegrams, "The Builder, London."

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 2s. 6d.
Each additional line ..... 1s. 6d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent; but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office*, 4, Catherine Street, Strand, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed), 1s.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

September 11.—By J. HANNAFORD & SON.

Burrington, Devon.—Farms and pasture land, 102 acres, f. (including timber)	£2,564
Four cottages, f.	170

By WARD & CHOWEN.

Brentor, Devon.—Prescombe Farm, 74 a. 2 r. 11 p., f.	3,000

September 12.—By J. HANNAFORD & SON.

Ashreigney, Devon.—Bolts and Lake Farms, 46 acres, f. (including timber)	1,158
Winkleigh, Devon—Lower Narracott Farm, 68 acres, f. (including timber)	1,525
Mitchell's cottages, f.	175
Chulmleigh, Devon.—Holland Farm, 24 a. 2 r. 4 p. (including 38 a. 1 r. 22 p. of woodland), f.	400

By RENDELL & SAWDYE.

West Ogwell, Devon.—Part of Ogwell Estate, 472 acres, f.	13,358

September 13.—By HONEYBALL & FINN.

Norton, Kent.—Part of Sharsted Estate, 135 acres, f.	6,610
Rodmersham, Kent.—Dungate Farm, 60 a. 1 r. 13 p., f.	1,250
Murston, Kent.—Highsted Field, 4 a. 1 r., f.	150

September 17.—By RUTLEY, SON, & VINE.

Kentish Town.—26, Ashdown-st., u.t. 54 yrs., g.r. 7l., q.r. 36l.	275
St. Pancras.—22, 23, and 24, Seaton-st., f., w.r. 150l. 16s.	850

By N. EASTON & SON.

Paull-in-Holderness, Yorks.—Auster Grange Farm, 128½ acres, f.	2,600
Wallingfen, Yorks.—Common Farm, 109 acres, f. and c.	2,300
Burton Pidsea, Yorks.—Grass land, 170 acres, f.	3,880

September 18.—By J. A. & W. THARP.

Camberwell.—40, 42, and 44, Southampton-st. (s.), f., w.r. 83l. 4s.	365
Limehouse.—3 to 9 (odd), Samuel-st., c., w.r. 101l. 8s.	460

By WILSON & GRAY.

Balham.—5, Thurleigh-rd., f., p.	800

By SIMMONS & SONS.

Hurley, Berks.—Farms, etc., 693 a. 1 r. 8 p., f.	31,375

September 19.—By ROGERS BROS.

Bermondsey.—228, Fort-rd., u.t. 22 yrs., g.r. 5l., w.r. 36l. 8s.	100

By PETTY & SON.

Clapton.—97, Powerscroft-rd., u.t. 60½ yrs., g.r. 8l. 8s., y.r. 38l.	310
Leytonstone.—2, Short-rd., u.t. 82 yrs., g.r. 3l. 3s., e.r. 31l. 4s.	145

By GRIMLEY & SON.

Acocks Green, Worcester.—Stockfield-rd., two cottages, f., w.r 26l. 13s.	270
Harborne, Staffs.—154 and 156, Park Hill-rd., u.t. 78 yrs., g.r. 6l. 12s. 8d., w.r. 41l. 16s.	300

September 20.—By MARK LIELL & SON.

Bromley-by-Bow.—26 and 28, Spanby-rd., u.t. 50 yrs., g.r. 7l., w.r. 67l. 12s.	£200
Mile End.—39 to 45 (odd), Mossford-st., u.t. 50 yrs., g.r. 20l., w.r 150l. 18s.	360

By DAVID J. CHATTELL & SON.

Forest Hill.—Levendale-rd., f.g. rents 60l., reversion in 91 yrs.	1,260
Shepherd's Bush.—Eynham-rd., f.g. rents 56l. 14s., reversion in 91 yrs.	1,330
Glenroy-st., f.g.r. 65l., reversion in 91 yrs.	156
Pavilion-ter., f.g. rents 51l. 9s., reversion in 91 yrs.	1,200

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 14 0
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 13 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0
GLAZED BRICKS—			
Best White, Ivory, and Salt Glzd.Str'tch'rs	12 7 6	Double Headers	14 17 6
		One Side and two Ends	18 17 6
Headers	11 17 6	Two Sides and one End	19 17 6
Quoins, Bullnose, and ¼ in. Flats	15 17 6	Splays & Squints	17 7 6
D'ble Stretchers	17 17 6		

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 6	" "
Best Portland Cement	36 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 6d. per yard delivered
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 3
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 2		

STONE (*Continued*).

YORK STONE—*Robin Hood Quality.*

	£ s. d.
Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	2 10
Per Ft. Super., Delivered at Railway Depôt.	
4 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
4 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1½ in. to 2 in. ditto, ditto	0 6

HARD YORK—

	£ s. d.
Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	3 0
Per Ft. Super., Delivered at Railway Depôt.	
4 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
4 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20×10 best blue Bangor	13 2	20×10 best Eur'ka unfading green	15 17 6
20×12 ditto	13 17 6	20×12 ditto	18 7 6
20×10 1st quality ditto	13 0 0	18×10 ditto	13 5 0
20×12 ditto	13 15 0	16×8 ditto	10 5 0
16×8 ditto	7 5 0	20×10 permanent green	11 12 6
22×10 best blue Portmadoc	12 12 6	18×10 ditto	9 12 6
16×8 ditto	6 12 6	16×8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz.)	3 6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz.)	3 0	Valley (per doz.)	3 6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 0 0 ...	15 10 0
Deals: best 3 by 9	13 10 0 ...	14 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0 ...	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by in. and 2 in. by 6 in.	9 10 0 ...	10 10 0
2 in. by 4½ in. and 2 in. by 5 in.	9 0 0 ...	10 0 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¼ in.	1 0 0	"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0 ...	5 10 0
Seconds	4 10 0 ...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6 ...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0 ...	3 10 0
Swedish balks	2 12 6 ...	3 0 0
Pitch-pine timber (30 ft. average)	5 5 0 ...	6 0 0

JOINERS' WOOD.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 10 0 ...	25 10 0
3 in. by 9 in.	22 10 0 ...	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0 ...	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0 ...	20 0 0
" " 3 in. by 9 in.	18 0 0 ...	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0 ...	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0 ...	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0 ...	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0 ...	22 10 0
Do. 3 in. by 9 in.	18 10 0 ...	19 10 0
Battens	14 0 0 ...	15 0 0
Second yellow deals, 3 in. by 11 in	16 10 0 ...	17 10 0
Do. 3 in. by 9 in.	15 0 0 ...	16 0 0
Battens	11 10 0 ...	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0 ...	14 10 0
Do. 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	15 0 0 ...	16 0 0
" " 3 in. by 9 in.	14 0 0 ...	14 10 0
Battens	11 10 0 ...	12 10 0
Second white deals, 3in. by 11in.	14 0 0 ...	15 0 0
" " 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
Pitch-pine: deals	19 0 0 ...	21 0 0
Under 2 in. thick extra	0 10 0 ...	1 0 0
Yellow Pine—First, regular sizes	48 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube.	0 4 6 ...	0 6 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0 ...	0 3 9
Small "	0 2 6 ...	0 3 6
Wainscot Oak Logs, per ft. cube	0 6 6 ...	0 8 0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	£ s. d.	£ s. d.
Dry Wainscot Oak, per ft. sup. as inch	0 0 10 ...	0 1 0
¼ in. do. do.	0 0 8½ ...	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 10 ...	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6 ...	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10 ...	0 1 0
Teak, per load	18 0 0 ...	22 0 0
American Whitewood planks, per ft. cube	0 5 0 ...	0 6 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6 ...	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0 ...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0 ...	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0 ...	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6 ...	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0 ...	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0 ...	0 13 6
1 in. by 7 in. " "	0 14 0 ...	0 18 6
¾ in. by 7 in. white " "	0 10 0 ...	0 11 0
1 in. by 7 in. " "	0 12 9 ...	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, £ s. d.	Railway Vans, per ton. £ s. d.
Rolled Steel Joists, ordinary sections	8 10 0 ...	9 10 0
Compound Girders, ordinary sections	10 0 0 ...	11 0 0
Steel Compound Stanchions	11 10 0 ...	12 10 0
Angles, Tees, and Channels, ordinary sections	10 0 0 ...	11 0 0
Flitch Plates	10 0 0 ...	11 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 0 0 ...	8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	9 0 0 ...	9 10 0
Staffordshire Crown Bars, good merchant quality	9 5 0 ...	9 15 0
Staffordshire "Marked Bars"	11 0 0 ...	—
Mild Steel Bars	9 5 0 ...	9 15 0
Hoop Iron, basis price	10 0 0 ...	—
" " Galvanised	17 10 0 ...	—
(*And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	10 5 0 ...	—
" " 24 g.	11 5 0 ...	—
" " 26 g.	12 15 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0 ...	—
Ordinary sizes to 22 g. and 24 g.	16 0 0 ...	—
" " 26 g.	17 0 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 10 0 ...	—
" " 22 g. and 24 g.	19 0 0 ...	—
" " 26 g.	20 10 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes, 6ft. to 8ft. 20 g.	15 0 0 ...	—
" " 22 g. and 24 g.	15 5 0 ...	—
" " 26 g.	16 15 0 ...	—
Best Soft Steel Sheets, 5 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0 ...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 10 0 ...	—
" " " 26 g.	15 10 0 ...	—
Cut Nails, 3 in. to 6 in.	11 0 0 ...	11 10 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	£ s. d.	
LEAD—Sheet, English, 4lb. and up	26 15 0 ...	—
Pipe in coils	27 5 0 ...	—
Soil pipe	30 5 0 ...	—
Compo pipe	30 5 0 ...	—
ZINC—Sheet—	In casks of 10 cwt.	
Vielle Montagne	33 15 0 ...	—
Silesian	33 10 0 ...	—
Zinc, in bundles, 1s. per cwt. extra.		
COPPER—		
Strong Sheet per lb.	0 1 1 ...	—
Thin " "	0 1 2 ...	—
Copper nails "	0 1 0 ...	—
Copper wire "	0 1 0 ...	—
BRASS—		
Strong Sheet "	0 1 0 ...	—
Thin "	0 1 1 ...	—
TIN—English Ingots "	0 2 3 ...	—
SOLDER—Plumbers' "	0 0 10½ ...	—
Tinmen's "	0 1 1½ ...	—
Blowpipe "	0 1 3½ ...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
" fourths	2d.	32 oz. thirds	5½d.
21 oz. thirds	2¾d.	" fourths	4½d.
" fourths	3d.	Fluted Sheet, 15 oz.	3d.
26 oz. thirds	4½d.	" 21 oz.	4d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

¼ Rolled plate	2½d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	2¾d.
⅛ Rough rolled and rough cast plate	2½d.	Ditto, tinted	3d.
¼ Rough rolled and rough cast plate	3d.		

* Not less than two crates.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 3 0
" " " in barrels	"	0 3 1
" " " in drums	"	0 3 2
Boiled " " in barrels	"	0 3 2
" " " in drums	"	0 3 5
Turpentine in barrels	"	0 2 7
" in drums	"	0 2 9
Genuine Ground English White Lead,	per ton	30 15 0
Red Lead, Dry	"	27 10 0
Best Linseed Oil Putty	per cwt.	0 10 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 6 p.m. on Wednesday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BARRY.—For drill hall, for the Glamorgan Territorial Force Association. Messrs. Teather & Wilson, architects, Cardiff:—

D. Davies & Sons* £4,470

BIRMINGHAM.—For extensions of the Council House. Messrs. Ashley & Winton Newman, architects, London, W.C. Quantities by Mr. A. Rouse and Mr. Hugh Watkins, quantity surveyors:—

W. Sapcote & Sons	£65,315	H. Lovatt, Ltd.	£59,864
W. Cubitt & Co.	64,964	J. Bowen & Sons	59,134
W. Bishop	63,972	F. G. Minter	58,734
H. Willcock & Co.	62,836	J. Barnsley & Sons, Birmingham*	57,058
T. Elvins & Sons	59,940		

CABBAGE HALL.—For repairs and decorations to All Saints' Presbytery, Oakfield, for the Rev. Wm. Gregson. Mr. J. A. McGovern, architect, 26, North John-street, Liverpool:—

Hall & Jamieson* £109 15

CARDIFF.—For alterations and additions to No. 51, Mountstuart-square, for Messrs. Evans & Reid, 56, Mountstuart-square, Cardiff. Messrs. I. Jones & P. Thomas, architects, Cardiff. Quantities by architects:—

Shepton & Sons	£880	Turner & Sons, Ltd.	£798
W. H. & P. R. Evans	874	John Gibson	798
Knox & Wells	870	Watkin Williams	790
Gough Bros.	870	F. Waterman	787
G. Griffiths & Son	840	James Stephens	760
Blacker Bros.	825	E. R. Evans & Bros., Gwenynth-street*	758 13 6
W. T. Morgan	820	E. P. Edwards & Co.	623
D. Davies & Son	800		
W. T. Symonds & Son	799		
David Davies	798		

DOVER.—For new riding school with orderly rooms, stores, armouries, caretaker's quarters, and sundry alterations to existing drill hall, Liverpool-street, Dover, Kent. Plans and specifications by Mr. F. G. Hayward, F.S.I., Dover. Quantities by Mr. C. F. S. Poland, 6, John-street, Bedford-row, London, W.C.:—

W. Bromley	£6,99	G. Browning	£6,285
L. A. Wise	6,740	G. Lewis & Sons	6,280
Austen & Lewis	6,65	J. Parsons	6,200
C. E. Beaufoy	6,630	R. W. Paramor	6,198
G. E. Wallis & Sons	6,464	G. H. Denne & Son	6,144
C. E. Skinner	6,459	T. T. Denne	5,989
C. I. Epps	6,298	W. H. Grigg, Dover*	5,767

DUBLIN.—For the erection of stables for the Corporation. The City Architect, City Offices, Dublin:—

	Brickwork.	Concrete.
Corporation Workshops	—	£776
Lidwill & Co.	£740	690
Jos. Pemberton & Sons	720	685
Farmer Bros.	703	698
B. W. Whyte	684	686
A. Hull & Co.	679	669
John Pemberton	676	669
T. Mackey & Sons	670	645
R. Farquharson	650	642
J. & W. Stewart	615	565
F. Manning	592	577
B. Pemberton & Sons, Dublin†	574	566

EASTCOTE and RUISLIP.—For making roads and laying sewers for the Home Freeholds Company. Mr. F. Allen, A.M.I.C.E., surveyor:—

Willis & Powis, Wembley* £13,074 14

LONDON.—For Seven Kings Baptist Church. Messrs. Geo. Baines & Son, architects, 5, Clement's Inn, Strand, London, W.C.:—

—	Estimate A.	Estimates B, C, D, F, G, H.	Total.
	£ s. d.	£ s. d.	£ s. d.
W. Hammond	4,773 0 0	271 0 0	5,044 0 0
J. Willmott & Sons	4,811 0 0	218 0 0	5,029 0 0
E. Roome & Co.	4,672 0 0	246 0 0	4,918 0 0
W. E. Blake, Ltd.	4,468 14 0	265 12 0	4,734 6 0
J. Smith & Sons	4,497 0 0	228 0 0	4,725 0 0
W. Johnson & Co.	4,482 0 0	216 0 0	4, 98 0 0
F. & F. H. Higgs	4,462 0 0	221 0 0	4,683 0 0
Holliday & Greenwood	4,475 0 0	203 10 0	4,678 10 0
Akers & Co.	4,398 0 0	269 0 0	4,667 0 0
Goddard & Sons	4,523 0 0	121 0 0	4,644 0 0
Mattock Bros.	4,444 0 0	199 0 0	4,643 0 0
Mattock & Parsons	4,379 0 0	241 0 0	4,620 0 0
W. Gladding & Co.	4,370 0 0	240 0 0	4,610 0 0
Battley, Sons, & Holness	4,330 0 0	129 10 0	4,459 10 0
J. W. Jerram‡	4,236 0 0	178 15 0	4, 14 15 0
J. Appleby & Sons§	4,042 0 0	201 0 0	4,243 0 0

‡ Accepted with modifications. § Withdrawn.

HAMILTON.—For erection of new Municipal Offices. Messrs. Cullen, Lochhead, & Brown, architects, Hamilton:—

Masons: T. Anderson & Son, Hamilton* £6,782
Joiners: J. Dalziel & Son, Hamilton* ... 2,448
Plumbers: L. Taylor, Hamilton* ... 566
Slater and Plasterer: W. Bannatyne, Hamilton* ... 815
Tilers: R. Brown & Son, Paisley* ... 320
Heating: J. Combe & Son, Glasgow* ... 319
Electric: J. W. Torrance, Hamilton* ... 615
Glazier: J. McLaren, Hamilton* ... 109

HARROGATE.—For building the Theosophical Hall and lodge premises in East-parade, Harrogate, for the Trustees of the Harrogate Lodge of the Theosophical Society. Mr. J. E. Reid, Lic.R.I.B.A., architect, Whitby-avenue, Heworth, York:—

J. Lee	£1,359 11 0	Rhodes Bros.	£1,233 6 7
W. R. Birkinshaw	1,294 18 6	T. Godfrey	1,209 15 3
J. W. Taylor	1,293 0 0	C. A. Nettleton, Station-parade*	1,149 0 0
J. Allen & Son	1,265 0 0		
C. Dawson & Son	1,250 0 0		

LIVERPOOL.—For alterations to auction galleries, 60, Hanover-street, for Messrs. Branch & Leete. Mr. J. H. McGovern, architect, 26, North John-street, Liverpool:—

Bullen Bros.* ... £453

LONDON, N.E.—For extension of the generating station, for the Hackney Borough Council:—

A. & S. Wheater	£22,833 9 3
J. W. Jerram	22,300 0 0
C. Brightman & Son, Ltd.	21,8 0 0 0
Sabey & Son, Ltd.	21,450 0 0
W. Shurmur & Sons, Ltd.	21,360 0 0
Holliday & Greenwood, Ltd.	21,200 0 0
F. & G. Foster	20,645 0 0
G. Trollope, Sons, & Colls & Sons, Ltd.	20,570 0 0
Markham & Markham	20,500 0 0
J. Greenwood, Ltd.	20,183 0 0
F. G Minter	20,125 0 0
Davey & Armitage	19,795 0 0
E. Lawrence & Sons, Ltd.	19,595 0 0
J Mowlem & Co., Ltd.	19,287 0 0
Patman & Fotheringham, Ltd.	18,951 0 0
Allen & Co.	18,750 0 0
Strand Building Co., London, S.W.‡	18,657 0 0
D. W. Parker & Sons, Ltd.§	17,270 0 0
S. E. Moss§	17,000 0 0

‡ Recommended for acceptance. § Withdrawn.

MARYPORT.—For alterations to branch shop, Grasslot, for Maryport Co-operative Industrial Society. Messrs. W. G. Scott & Co., architects and surveyors, Workington:—

Mason: W. Marshall, Maryport	£103	9	4
Joiners: T. Ferguson & Sons, Maryport	85	5	0
Slater: Marshal Clark, Maryport	9	5	3
Plasterer: Thos. Kirk, Maryport	49	7	5
Plumbers: Pope & Co., Workington	24	7	0
Glazing and Painting: R. Brocklebank, Maryport	8	7	6

SEAFORTH.—For the conversion of private houses into shops at the corners of Hereford-road and Rawson-road, and Cambridge-road, for Messrs. Queen & Foster. Mr. J. H. McGovern, architect, 26, North John-street, Liverpool:—

Cromie ... £450

WHITCHURCH (Shropshire).—For New Primitive Methodist Chapel and School, Brown Knowl, Broxton. Mr. J. Harry-Pickard, architect.—

—	Main Contract.	Spire.	Total.
	£ s. d.	£ s. d.	£ s. d.
J. Harding	1,337 0 0	161 0 0	1,498 0 0
T. Rowlands	1,300 0 0	160 0 0	1,460 0 0
J. Barnes	1,235 0 0	144 0 0	1,379 0 0
H. Jones	1,259 0 0	119 0 0	1,378 0 0
Viches & Sons	1,175 0 0	175 0 0	1,350 0 0
C. Parker	1,208 0 0	125 0 0	1,333 0 0
G. Edge	1,137 0 0	137 17 0	1,274 17 0
G. Dodd & Son‡	1,095 18 0	142 0 0	1,237 18 0
J. Matthews	1,093 0 0	118 0 0	1,201 0 0

‡ Retained for further consideration.

SOUTHEND.—For the construction of the first portion of the boulevard in the Thorpe Bay district, for the Southend Town Council. Mr. E. J. Elford, borough engineer:—

W. Iles & Sons* ... £15,150

SUDBURY HILL (Middlesex).—For making roads and laying sewers, for Mr. H. Higinbotham. Mr. J. S. Fitzpatrick A.M.I.C.E., surveyor:—

Willis & Powis, Wembley* ... £1,520

YSTRAD MYNACH.—For alterations and additions, including skittle alley, etc., to the Constitutional Club. Mr. H. Gabe Jones, architect, Hengoed.

E. James, Hengoed* ... £510

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